APR. 15 1960

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

Octane needs of economy engines pose threat to refiners ... 11

Residual fuel quotas hiked 15.5% ... 13

Green River Basin sparks the Rockies ... 19

East Texas has 15th Jurassic pool ... 22

Pipeline boom is starting in Canada ... 39

Electric heat pushed for Northeast ... 49

Refiners focus attack on bacteria ... 52

45% of Libyan concessions to be ... 58

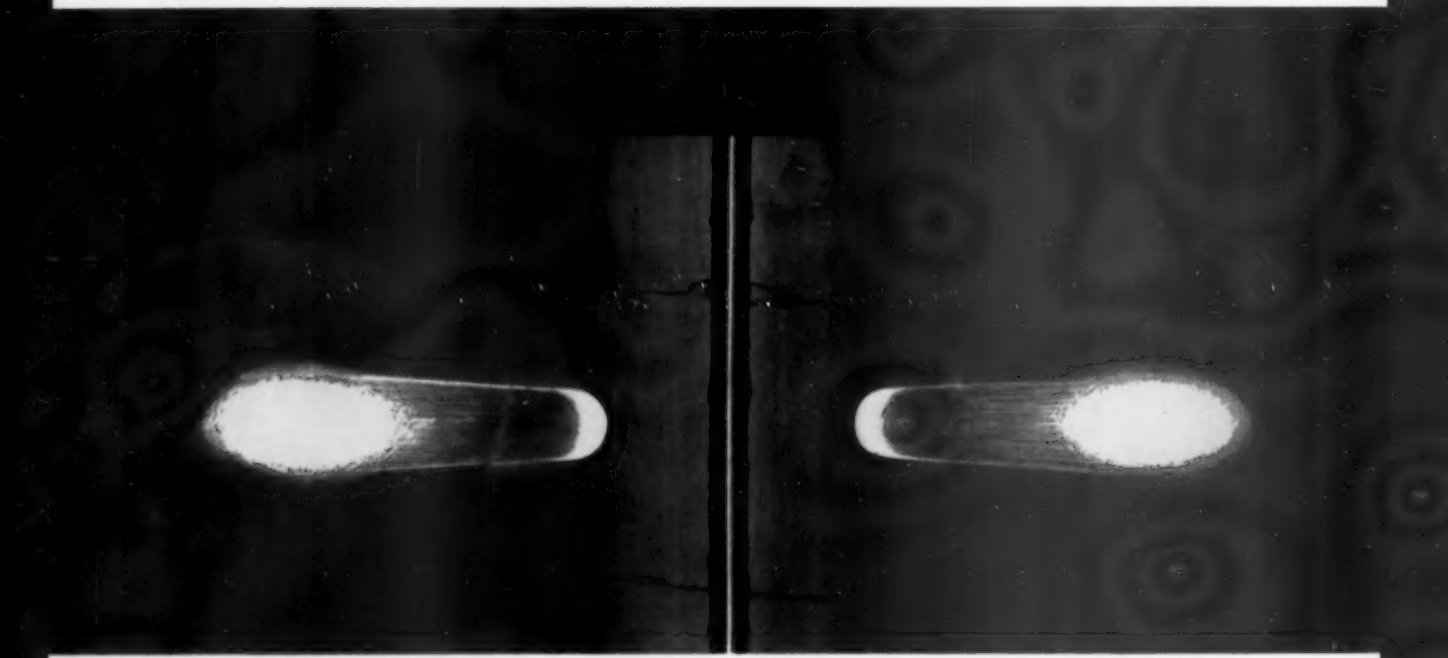
Italy's gas cut threatens crude price ... 60

Price 50 Cents

UNIV MICROFILMS INC
EDITORIAL DEPT
313 N FIRST ST
ANN ARBOR MICH A C 9

The New Schlumberger
Deep Induction Log

reaches twice as deep to give twice the contrast between water and oil



Engineered to overcome deep invasion, the new Schlumberger Deep Induction Log retains all the advantages of the Induction-Electrical Log . . . symmetrical response, thin bed definition, detail for correlation, simultaneous recording with 16″ SN and SP . . . *plus* an investigation twice as deep which gives twice the contrast between water and oil.

Your Schlumberger engineer will be glad to explain this new service in detail. It's another product of Schlumberger research and engineering to meet the challenge for greater efficiency in oil finding.

THE EYES OF THE OIL INDUSTRY*

SCHLUMBERGER

Money Saving
memo to Refiners
Since this ad appeared a year ago more than 50 refiners have cut antioxidant costs with "Ethyl" Antioxidant 733.

sharpen your pencil on gasoline antioxidant costs

"ETHYL" Antioxidant 733 can cut them as much as 50%

Savings up to 50%!

That's the report of refineries now using "Ethyl" Antioxidant 733. Ortho-alkylation—a unique Ethyl development—makes possible this effective, low-cost, ashless antioxidant for motor gasolines, jet fuels and industrial oils.

733 is a safe and easy-to-handle liquid. It is particularly effective in providing storage stability for today's—and tomorrow's—higher octane fuels. Now available in commercial quantities.

Want more information on this new member of our growing "Ethyl" antioxidant family? Your Ethyl Representative will be glad to show you how 733's efficiency and economy can result in lower costs for you. Ask him today.

ETHYL CORPORATION, NEW YORK 17, N. Y. • TULSA • CHICAGO • LOS ANGELES

ETHYL CORPORATION OF CANADA LIMITED, TORONTO • **ETHYL USA (EXPORT)** NEW YORK 17, N. Y.

ETHYL
ETHYL CORPORATION

New Process

* GUARANTEES

Lowest Product Recovery Cost
Shortest Unit Payout Time

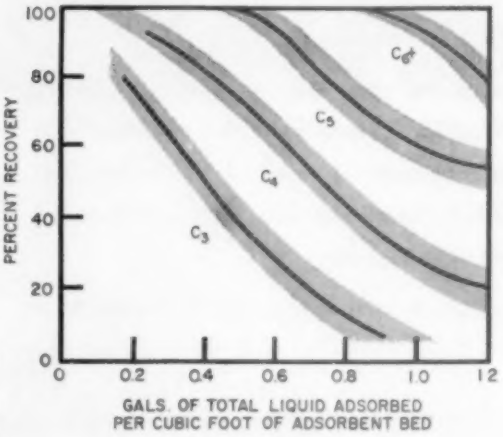
The Adsorption Process

DELTA DRYEX GASOLINE PLANT

The most economical commercial gasoline, butane and propane recovery process ever designed.

* Delta quotes a turnkey onstream installation with guaranteed recoveries.

- **A new concept for natural gasoline, butane and propane recovery.**
- **Recovers *both* natural gasoline and NGAA specification butane and propane.**
- **You get more product at a much lower cost (half in many cases) than any other commercial process.**
- **You are assured of shortest unit payout time.**
- **Dryex adsorption gasoline plants are complete including fractionation and refrigeration equipment which yield NGAA specification products.**



Dryex gasoline plants open a new realm of profit possibilities. Even those gas streams considered for other processes in the past and eliminated as economically impractical should be reviewed for a Dryex gasoline plant application.

LET DELTA ANALYZE YOUR GAS STREAM TO DETERMINE THE VALUE OF DRYEX TO YOU

Patent No. 2,880,818 dated April 7, 1959

For Brochure and Complete Information, Write:

DELTA

DELTA TANK MANUFACTURING CO., INC.

P. O. BOX 1469 • BATON ROUGE, LA. • TEL. Dickens 3-5701

PETROLEUM WEEK

Publisher—Ervin E. DeGraff

Editor—LeRoy Menzing

Managing Editor—Richard M. Machol
General News—Robert E. Spann, editor; J. Richard Shaner, Larry Christiansen, Jr., Doris D. Grandelis
Columnist & International Editor—Wanda M. Jablonski
Regional Editor—Glenn Green, Jr. (Houston)
Exploration, Drilling & Production—Ade Ponikvar, editor; Jim Bower
Processing & Petrochemical Editor—Rene J. Bender
Pipelines, Tankers & Storage Editor—Vincent W. De Salvo
Foreign News—Georgia Macris, Frederic J. Cassin
Marketing Editor—Robert L. Siegel
Market Trend—Halsey Peckworth
District Editors
Dallas—Marvin Reid *Tulsa*—Jim Mayes *Bakersfield*—William Rintoul
Houston—Eugene Bush *Chicago*—Stewart Ramsey *Los Angeles*—Kemp Anderson
Presentation—William A. Caperell, director; Mildred Schutte
Editorial Assistants—Dorothy Miller (Chicago), Carole A. Masucci
Librarian—Helen T. Schaefer **Reprint Service**—Rita Feeney
Domestic News Service
Chicago Bureau—Bruce Cross
Cleveland Bureau—Arthur Zimmerman, chief; Violet Forsha
Dallas Bureau—Mary Lorraine Smith, Barbara Eaves
Detroit Bureau—Donald MacDonald, chief; Sally Ayling
Los Angeles Bureau—Michael Murphy, Jack Meyer, Marvin Petal
San Francisco Bureau—Jenness Keene, chief; Donald Winston, Alison Lunt
Washington Bureau—George B. Bryant, Jr., chief; Glen Bayless, Dean Reed, D. O. Loomis, Roy Calvin, Seth Payne
Correspondents: Anchorage, Austin, Baton Rouge, Billings, Bismarck, Calgary, Casper, Cheyenne, Corpus Christi, Denver, Edmonton, Evansville, Farmington, Ft. Worth, Midland, Mobile, Montreal, New Orleans, Odessa, Oklahoma City, Ottawa, Philadelphia, Pittsburgh, Regina, Salt Lake City, Seattle, Shreveport, Toronto, Vancouver
Foreign News Service
Middle East Bureau—Onnic Marashian, chief
Caracas Bureau—John Pearson, chief
Bonn Bureau—Morrie Helitzer, chief; Silke Brueckler, Jim Morrison, Helga Berendt
London Bureau—John Shinn, chief; John Tunstall, George Bull
Mexico City Bureau—Peter Weaver, chief; Lourdes Marin
Moscow Bureau—Ernest Conine, chief
Paris Bureau—Robert E. Farrell, chief; Helen Avati, Arthur Erikson
Tokyo Bureau—Sol Sanders, chief; Toshiko Matsumura, John Yamaguchi
Correspondents: Amsterdam, Ankara, Bogota, Bombay, Brussels, Buenos Aires, Cairo, Djakarta, Geneva, Guatemala City, Havana, Karachi, La Paz, Lima, Manila, Melbourne, Rabat, Rangoon, Rome, San Jose, Sao Paulo, Teheran, Vienna
Manager, McGraw-Hill World News Service—John Wilhelm; Margaret Ralston, managing editor.
Economics Staff—Dexter M. Keezer, director; Douglas Greenwald
Assistant to the Publisher—William F. Bland
Business Department: *Advertising Sales Manager*—Donald R. Thompson; *Advertising Service Manager*—John E. Thompson; *Western General Manager*—Donald O. Hanson; *Circulation Manager*—Harriet Costikyan; *Promotion Manager*—N. F. Cullinan; *Research Manager*—Leo M. Murray; *Advertising Makeup*—P. J. Callahan
Other McGraw-Hill Petroleum Publications
NATIONAL PETROLEUM NEWS PLATT'S OILGRAM NEWS AND PRICE SERVICES

PETROLEUM WEEK **APRIL 15, 1960**
Vol. 10, No. 15

Published weekly by McGraw-Hill Publishing Co., Inc. James H. McGraw (1860-1948), founder. Publication office: 871 N. Franklin St., Chicago 10, Ill. See panel below for directions regarding subscriptions or change of address.

Executive, Editorial, Circulation and Advertising Offices: 330 W. 42nd St., New York 36, N. Y. **Officers of the Publications Division:** Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Officers of the Corporation:** Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary.

Subscriptions are solicited only from executives, supervisors, and technically trained personnel in the oil and natural gas industries, who are engaged in exploration, drilling, producing, processing, petrochemical manufacture, transportation, or wholesale marketing. **Position and company connection must be indicated on subscription orders.** Subscription rates for all countries: $3 per year. Single copies 50¢. Second class postage paid at Chicago, Ill. Printed in U.S.A.

Title registered in U.S. Patent Office. © Copyright 1960 by McGraw-Hill Publishing Co., Inc. All rights reserved.

Unconditional guarantee: Our primary aim is to provide subscribers with a useful and valuable publication. Any comments or suggestions for improvement will be most welcome. On written request from any subscriber, the publisher agrees to refund the unused portion of the subscription price.

Subscriptions: Address subscription correspondence and change of address to Fulfillment Manager, Petroleum Week, 330 W. 42nd Street, New York 36, N. Y. On address changes please give old and new addresses and zone numbers, if any, and enclose an address label from a recent issue if possible. Please allow one month for change to become effective.

Postmaster: Please send form 3579 to Petroleum Week, 330 W. 42nd St., New York 36, N. Y.

INSIDE *Slant*

GAS LOOMS LARGE

Did you know that the Standard Oil Co. (N.J.) gas reserves in the U.S. exceed in energy content the company's domestic crude reserves?

This bit of enlightening information was gleaned from Jersey's 1959 annual report.

While the annual report did not disclose the company's reserves, these figures were made available to stockholders in connection with the merger of Humble Oil & Refining Co. into Jersey last year.

Jersey's domestic crude and gas liquid reserves as of Dec. 31, 1958, were 4.3-billion bbl. Of this total, Humble held 3.9-billion bbl.

The natural gas reserves of Jersey in the U.S. as of Dec. 31, 1958, were 27-trillion cu. ft.

Again, Humble was the largest contributor to the total, with estimated reserves of 25.7-trillion cu. ft.

Aside from energy content, gas was most important to Jersey, financial-wise.

Jersey's affiliates increased the volume of their gas sales by 16% in 1959.

Total revenue from sales of gas and gas liquids was about $140-million.

LeRoy Menzing
EDITOR

Good Wells Make Good News

A Report on Recent Treatments Using Abrasijet

April 15, 1960

Abrasijet* — a Dowell-developed abrasive jetting service — uses high velocity streams of sand-laden fluid to perforate casing or clean hole walls. Here are four recent examples of the kind of results many operators have experienced.

- **Harrison County, East Texas** (New Oil Well) Pay zone was the highly soluble Glen Rose. Since the water table was only six feet below the producing interval, operator was afraid to use conventional perforating. Abrasijet was used to perforate from 4492 to 4493 feet with a vertical cut and from 4494 to 4495 feet with a vertical cut. 5000 gallons of 5 per cent acid and 5000 pounds of sand were jetted. Following Abrasijet, well tested 192 bopd without further treatment. This is considerably better than the 125 bopd average test of wells in the area that have been perforated with explosives and then acidized.

- **Lea County, New Mexico** (New Oil Well) This well was to be completed in the Grayburg and San Andres between 4501 and 4734 feet. Abrasijet was used to perforate because fracturing pressures of 6000 to 8500 psi had been required after conventional perforating. 55 levels were jetted allowing about four minutes at each level. Total jetting time was 216 minutes. Well was successfully fractured at only 4900 psi. Production is top allowable.

- **Kingman County, Kansas** (New Oil Well) This well was to be completed in the Mississippi lime at 4428 and 4434 feet. Other nearby wells had very high gas/oil ratios and were completed as gas wells. The operator wanted to get a low gas/oil ratio so this well could be completed for oil. Abrasijet was used to perforate at 4428 and 4434 feet. No further treatment was necessary. On test, the well swabbed 22 boph. Gas lift equipment was installed and a good well with a low gas/oil ratio resulted.

- **Montgomery County, Southeast Texas** (Old Oil Well) This well had depleted a lower zone of the Conroe sand, so the operator set a five-inch liner in the seven-inch casing before re-completing. Abrasijet was selected to perforate because of the heavy steel and cement sheath. Two perforations were jetted at each foot from 5019 to 5023 feet. 7500 gallons of salt water and 7400 pounds sand were used for jetting. Well came in flowing 54.5 bopd through a 10/64-inch choke. Gas/oil ratio was 507/1.

Many times, Abrasijet is the most economical way to perforate if a well is to be stimulated by fracturing or acidizing. Often, it has proved to be the only way to complete a problem well successfully. For service or detailed information, dial Dowell. Dowell services and products are offered from more than 150 offices and stations in the United States, Canada, Venezuela and Argentina. Dowell, Tulsa 1, Oklahoma.

*Dowell Service Mark

Services for the oil industry DOWELL

DIVISION OF THE DOW CHEMICAL COMPANY

60-Second Summary / WHAT'S HAPPENING IN OIL

April 15, 1960

dept/INDEX

Production	19
Pipelines	39
Processing	52
Marketing	49
Washington	16
Statistics	65
The Market Trend	66
Key Prices	67
Editorial	70
International	58
Personals	68
Service & Equipment	64

The auto makers are pushing for a hike in regular-grade octanes so that their "economy" engines will live up to their claims. But the increase being sought could cost the oil industry $1-billion in the next five years. . . . p. 11

•

A far-reaching boom in pipeline construction is shaping up in Canada. More than $195-million will be spent on new facilities to handle recently approved exports of 1-billion cf/d of gas to the U.S. . . . p. 39

•

Libya's relinquishment law may be a bonanza for oil companies that have no acreage there now. Many concessions must be reduced by one-fourth by May, 1961. . . . p. 58

•

The southwest corner of Wyoming is getting hot. Exploratory drilling and development are making it one of the most promising oil and gas areas in the Rockies. . . . p. 19

•

California motorists are face to face with an antismog law that may cost them $825-million. Car owners will have to install exhaust control devices to help reduce air pollution. . . . p. 14

•

A surprise increase in resid allocations gave importers a 15.5% "bonus" this week. The across-the-board increase will help companies with tight supply problems. . . . p. 13

•

An abandoned hole, redrilled to the Smackover lime, has given East Texas its 15th Jurassic pool. It is the first discovery in Delta County. . . . p. 22

•

Bacteria that thrive on petroleum products in storage tanks are getting increased attention in refinery research labs. Detailed reports on recent studies were given to the American Chemical Society. . . . p. 52

•

Fuel oil dealers in the Northeast soon may have more than natural gas competition to worry about. Electric heat promoters are readying themselves for an invasion of the area. . . . p. 49

•

Pemex got a painful setback in its bright dream of a Latin-American oil parley on a government basis. The conference fizzled out, and became a disappointing flop for the Mexican oil company. . . . p. 61

•

Supporters of the fair-trade bill are sweetening it up, in the hope that it can be dislodged from the House Rules Committee. . . . p. 49

Up to the Minute / SIGNIFICANT LATE NEWS

AT-A-GLANCE PETROLEUM WEEK

April 15, 1960

Some observers are wondering this week if the continued downward adjustments in crude postings can prevent a general price break. In many areas, the effect of the adjustments are the same as a general cut.

Sinclair Crude Oil Co. this week made the most significant adjustments of 1960—affecting 61,000 b/d in three areas. The company cut its flat price for 20,000 b/d it buys in East Texas by 15¢ a bbl., giving the big field its fourth posting. Atlantic Refining has been paying $3.05 a bbl. since last July, Premier Oil Refining has been posting $3.15 since Apr. 1, now Sinclair posts $3.10, while the majority of the buyers still offer $3.25.

Sinclair also cut its postings for Southwest Texas and Lower Gulf Coast heavy oils 10¢ to a top of $3.20 a bbl. The cut affected 9,000 b/d. In the Rockies, Sinclair cut sweet crudes 5¢ to a top of $2.93 a bbl. It buys 32,000 b/d there.

American Petrofina spread the price adjustments into North Texas with a cut of 19¢ a bbl. The company's new posting is topped at $2.82 a bbl.; it buys 5,400 b/d in Archer, Baylor, Clay, Jack, Knox, Stephens, Throckmorton, Wichita, Wilbarger, and Young counties. It brought an immediate protest from the North Texas Oil & Gas Assn.

•

Georgia is seeking to become the 32nd oil-producing state. The state will open bids next Tuesday for leases on state-owned lands in the Atlantic Ocean. Pure Oil Co. started the bidding invitation when it applied for permission to drill off the coast. State law requires bids for leasing public lands—but the state has no maps identifying the areas on which bids may be offered.

•

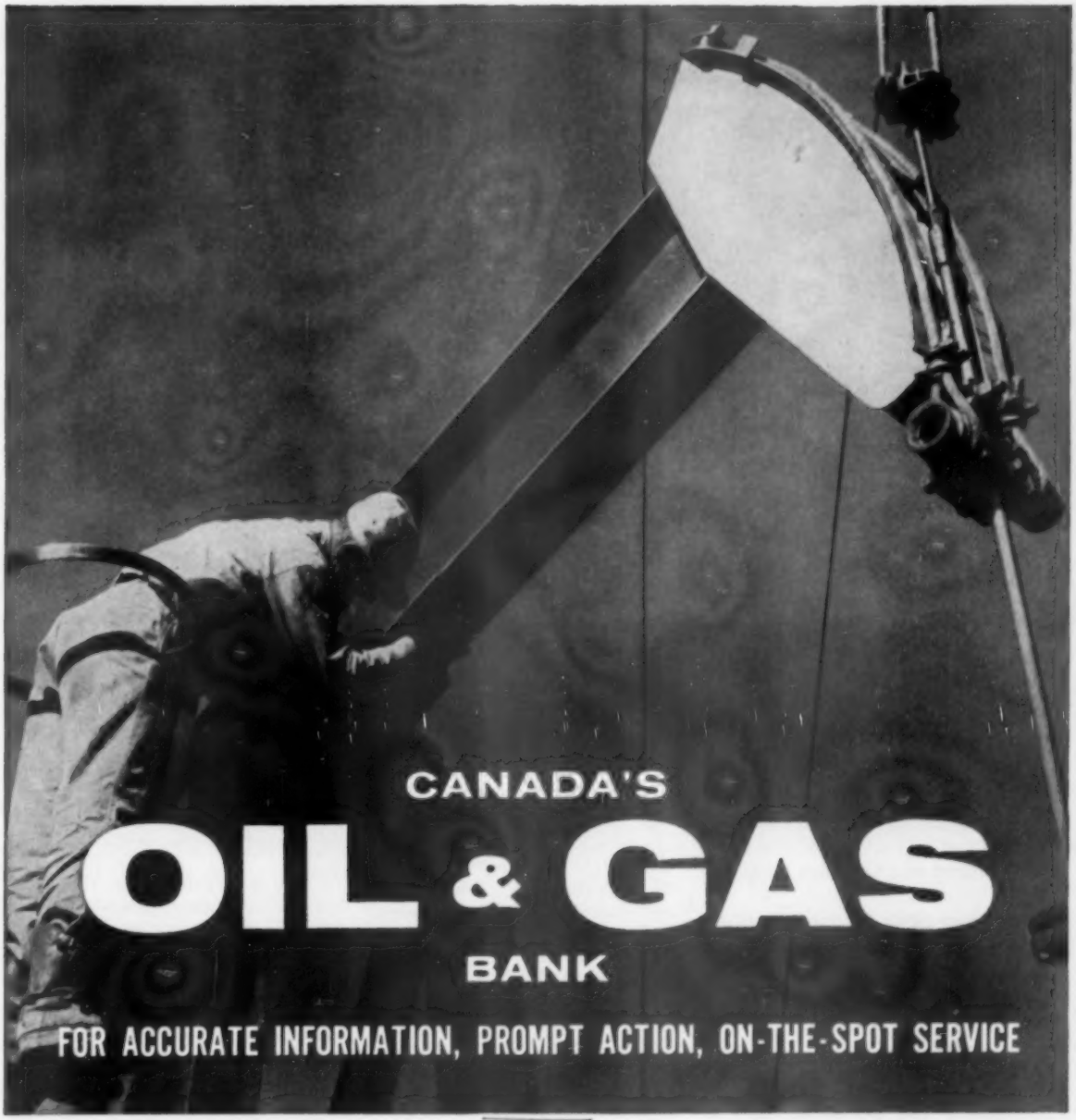
Louisiana and New Mexico allowables have been cut for May. Louisiana will cut 30,000 to 35,000 b/d by cutting the depth bracket formula to 33% from 35%. In New Mexico, the unit allowable in the southeast will be trimmed to 33 b/d, 2 b/d below April. The northwest allowable will remain at 60 b/d per unit. Purchasers in both Texas and Oklahoma want reduced allowables next month. Texas buyers reduced their nominations by 62,653 b/d from April, while Oklahoma nominations were cut 4,145 b/d.

•

An explosion damaged Crown Central Petroleum's Houston refinery Wednesday. First reports were that two persons were killed and ten were injured.

•

A House hearing on activities of Federal Power Commission members has been postponed until May 2. Chairman Oren Harris (D., Ark.) of the Interstate & Foreign Commerce Committee said a subcommittee will go into the Tennessee Gas Transmission-Midwestern Gas Transmission case and "related" matters. Scheduled to appear are Washington attorney Thomas G. Corcoran, who as a representative of Tennessee Gas contacted FPC members while Midwestern's rate was pending, and Commissioners Arthur Kline and William R. Connole.



With over 300 branches throughout Canada's Western provinces, the Royal Bank is in a unique position to provide complete, on-the-spot banking service to those entering the oil and gas industry as well as to those already established in it.

In addition, the Royal maintains a special Oil and Gas Department, staffed by experienced "oil bankers," which is exceptionally well organized to supply current information and helpful guidance. This department issues Oil and Gas bulletins containing current information and statistics that are basic to the Canadian industry. For an up-to-date list of bulletins, write The Royal Bank of Canada, Oil and Gas Department, 409 Eighth Ave. W., Calgary, Alta.

We do not provide information on oil securities

THE ROYAL BANK OF CANADA

Head Office: Montreal

New York Agency—68 William Street, New York 5, N. Y.

Dallas Representative—H. E. McClenaghan, 1523 Republic Bank Bldg.

Over 960 branches in Canada, the Caribbean area and South America • Offices in New York, London and Paris • Correspondents the world over

Total Assets Exceed 4 Billion Dollars

EXPERIENCED HANDS

The Wilson supply man who makes your rig or field location is an experienced supply and equipment man. He's there to be of service to you. He'll see to it . . . You get what you want . . . When you want it.

WILSON SUPPLY CO
HOUSTON, TEXAS

MAIN OFFICE & WAREHOUSE • 1301 CONTI • HOUSTON

DEPT/Opinions

Views That Make News

"The import quotas for crude are allocated among companies on a sliding scale which is discriminatory against the larger companies and is in no way necessary for the government's declared purposes. The regulation, thus, has been shaped to result in an anti-big-business bias. . . . We believe that the restriction on imports of fuel oil is against the interests of the consumer and of the nation as a whole."

—M. J. RATHBONE
President
Standard Oil Co. (N.J.)

"If the oil industry is going to continue to float on a sea of petroleum products, it faces ruinous competition. We can't count on the government to solve our problems. We have to do it ourselves."

—WILLIAM J. CARTHAUS
President
Great Northern Oil Co.

"The dangers of politically inspired cases of the baseless 'Tulsa' variety cannot be exaggerated. Even more dangerous is the secret war against free market pricing, the heart of America's competitive enterprise system."

—OUR SUN
Sun Oil Co.

"Through the years, oil has played a 'sugar daddy' role to Texas government. In that character, oil has had both responsibilities and privileges, which, to be absolutely frank, generally offset the burden. Today your industry is headed for a 'scapegoat' role —without responsibilities and without privileges. That role is not enviable."

—HORACE BUSBY
President
Business Research Corp.

"An informed press is the most important thing this industry can have."

—GEORGE D. MCDANIEL
Director, distributor relations
Mobil Oil Co.

"Do you think it possible to achieve a better understanding on the part of the average American when an unusually high percentage of the persons who make their living in the oil industry—including many in key positions—cannot explain statutory percentage depletion? Or are unaware of the competitive influences that are brought to bear on this industry? Or think the 'gas bill' is something you get every month from your local gas distributor?

If our own industry people are not sufficiently interested to learn of the issues that affect their industry and their jobs, can we expect a disinterested outsider to be concerned one whit about our plight?"

—CHARLES E. SIMONS
Executive vice-president
Texas Mid-Continent Oil & Gas Assn.

"This overproduction and resultant price-cutting has not sold one extra gallon of gasoline. The concept of the incremental gallon should be re-examined against the background of the petroleum industry's continuing health and progress."

—W. HAROLD REA
President
Canadian Oil Companies, Ltd.

"I cannot understand what is behind the loud groaning and complaint from the industry about too many wells. Of course, every producer brought in takes up some of the state's allowable; but surely it can be well understood by every operator that such is the case when he decided to drill another well. If the allowable is too low, why drill?"

—ERNEST O. THOMPSON
Chairman
Texas Railroad Commission

"We are continuing a substantial capital investment program. While we are concentrating on investments that enable us to reduce costs or to improve profits through better utilization of existing facilities, we will spend a portion of our capital money on attractive new opportunities. Our capital expenditure rate also is affected by the need to invest in new refineries in countries where we have substantial other interests. We will make large investments in at least three such refineries in 1960.

—ALBERT L. NICKERSON
President
Socony Mobil Oil Co.

"Marketing efficiency—its success or failure—will determine the life of your business."

—JOHN H. WHITE
President
Port Oil Co.

PETROLEUM WEEK *will publish reader comments each week. Address letters to LeRoy Menzing, Editor,* PETROLEUM WEEK, *330 W. 42nd St., New York 36, N. Y.*

Tons of iron ore turned into molten pig iron and from this ... steel. From research have come steels that can withstand the most intense heat and cold ... steels that will help man conquer space.

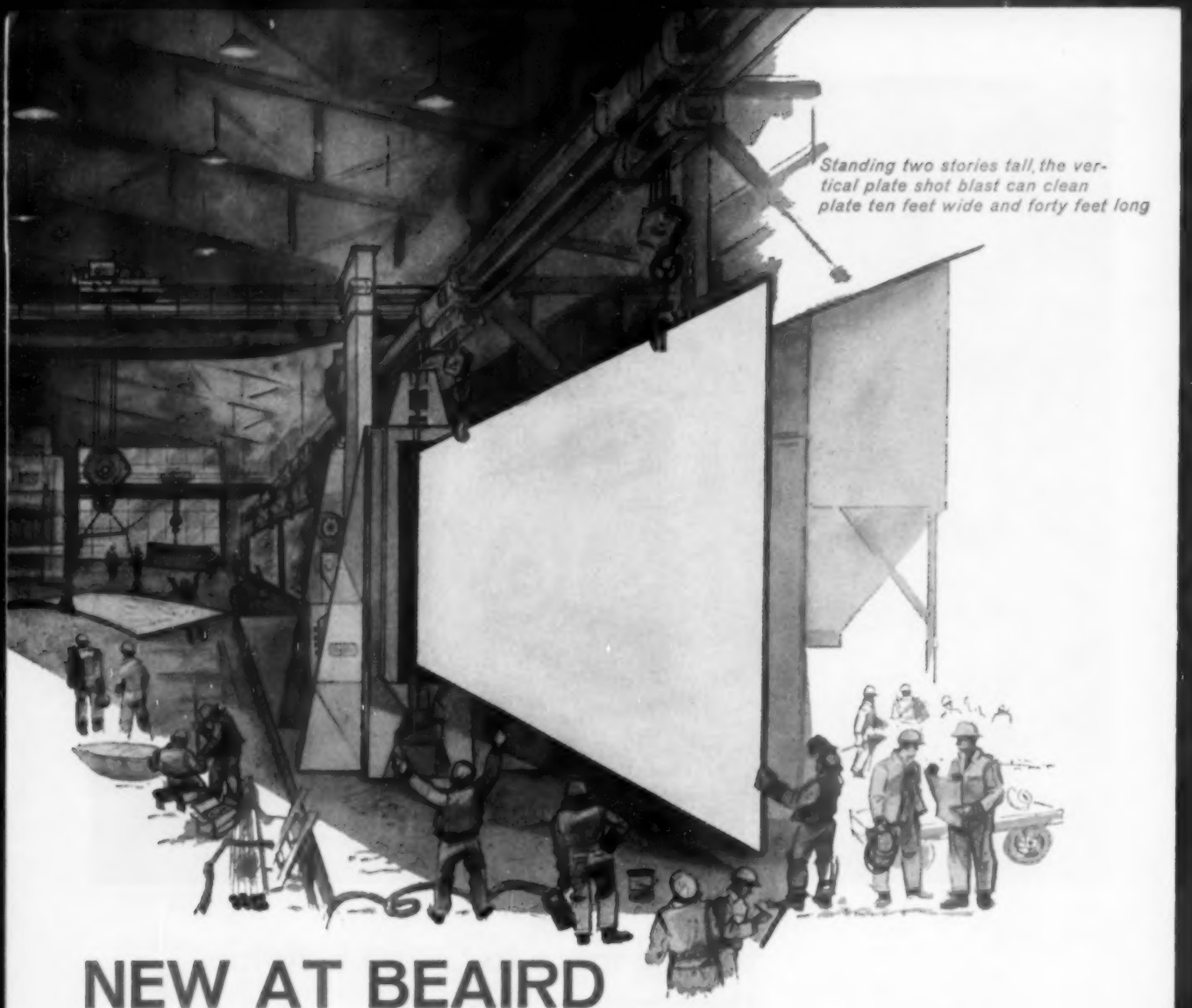
there's more to Cities Service than meets the eye!

It takes 523,451 men and women ... far-reaching exploration teams, transportation systems, testing and research labs to produce the steel we use. America produces more than 85 million net tons of steel each year to meet the demands of consumer and industry. Yet few of us ever think of all that goes into manufacturing this "everyday" metal.

And few of us pulling into the green-and-white Cities Service station to "fill her up" realize all that lies behind today's quality gasolenes. Cities Service uses a pipeline system that could circle the globe. We search four continents for oil and maintain the most modern research laboratories and refineries.

Cities Service has invested over a billion dollars in product improvement and development. The challenge of tomorrow requires even greater investment.

Only in this way can America have what it needs for progress—more jobs and more and better oil products.



Standing two stories tall, the vertical plate shot blast can clean plate ten feet wide and forty feet long

NEW AT BEAIRD

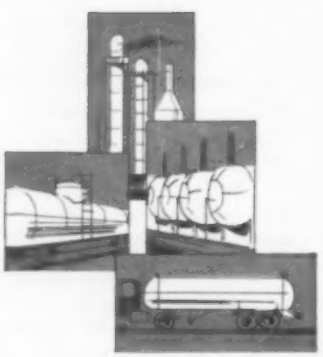
Assembly Line Vertical Plate Shot Blasting

Plate used in fabrication at Beaird is shot blasted cleaner than the proverbial whistle. Mill scale and foreign material are scoured off to provide a longer lasting paint bond, improve weld quality and free tank interiors from loose particles that may clog lines or contaminate product. Yet assembly line planning at Beaird has made this new service available without added cost to customers.

The vertical plate shot blasting system is just one of the many important equipment additions that are part of Beaird's planned facilities growth. Other new items include a 600-ton Gap Frame Press, 20-foot Plate Bending Rolls, Large Boom Welders, a 100-ton Bridge Type Crane and Precision Flame Planner for plate edge preparation.

Beaird is daily adding to its list of manufacturing accomplishments with such products as aluminum and alloy rail tank cars, stainless steel fractionating towers, giant pulp wood digesters and other specialized pressure vessels.

Check with Beaird on your next heavy steel or alloy product . . . you may save both time and money.



THE J. B. BEAIRD COMPANY, INC.
A subsidiary of American Machine & Foundry Company
Shreveport, Louisiana

SALES OFFICES: Shreveport, New Orleans, Louisiana • New York, New York • Tulsa, Oklahoma • Houston and Midland, Texas
BEAIRD INTERNATIONAL, INC., SHREVEPORT, LOUISIANA • Sales Offices: Calgary, Alberta, Canada • Caracas, Venezuela

another AMF BEAIRD product

Economy Cars May Hike Oil's Cost

The auto industry is pushing processors to increase octane ratings of regular gasoline to satisfy the claims made for their "economy" engines. The cost for even a "mild" hike in octanes could run to $1-billion in the next five years.

If auto makers have their way, the 'economy' engines could cost the oil industry $1-billion to boost the octane of regular-grade gasoline during the next five years.

That's the bill that some processors say would hit them if they have to make "even a mild acceleration" in octane increases for regular-grade motor fuel. It would come on top of the outlay of about $1.2-billion the industry has spent in the past five years for octane-boosting capacity.

If the need to step up octanes to satisfy the auto industry continues, the cost could easily more than offset "all the efficiency improvements due to cutbacks in manpower and belt-tightening in both refining and marketing during the last two years," one spokesman predicts.

The automobile manufacturers are asking the oil industry to increase the octane rating of regular-grade motor fuel nationwide so that their economy engines can measure up to the performance claimed for them.

The problem, according to one oil company engineer, is that the economy engines in the standard-size cars, and the engines designed for the new compact automobiles, are not obtaining the performance and miles-per-gallon in all sections of the country that the automobile makers claimed they would get.

"Even our own laboratory and road tests of these engines show that the mileage is well under the 25 mi. per gal. that has been claimed for some of these engines," he says.

While economy engines were designed for regular-grade in the 92-octane (research) range, one engineer comments, some auto makers would like to see the rating boosted several numbers—with no increase in price to motorists.

Increasing regular-grade octanes to the degree sought by the auto makers would pose a serious financial problem to the oil industry, some processors charge.

Refiners' margins—already tight—would be subjected to further downward pressures, and many refiners, caught in the struggle to stay up with competition, could find their margins fading away entirely.

Each jump in octane number represents an additional industry outlay of about $100-million per year in increased operating costs.

And unlike most quality improvements, this increase in octane number would be of no significance to the majority of regular-grade users.

More important to processors than the cost of the octane, however, is the revenue loss that will occur as customers switch from premium gasoline to the upgraded regular.

Such a loss of premium sales revenue can be more than "twice as large as the cost of increasing the octane on regular," a processor reports.

Premium grades today—averaging 99.5-octane (research) nationwide—"are approaching the limit of quality that can be of value to the cars of current design," one company argues.

And the octane requirements have leveled off, with premium gasolines tending to lose their potential value in terms of higher power output and better economy, the company's research division reports.

That's a primary reason for the trend to designing more cars for regular-grade, it notes. And the higher regular octanes go, the less incentive there will be for car manufacturers to design engines for premium-grade octanes.

"The final loser," the company concludes, "would be the motorists, who would be forced to pay for an extravagant waste of octane in a single or major grade."

The real blow to the industry's financial position would lie in the probable need for processors to absorb the costs of higher octanes without increases in prices.

A study of Gulf Coast refinery prices shows that octane increases have been accompanied by declining rather than rising prices for regular-grade gasoline.

In 1953, before crude prices were advanced, the Platt's Oilgram low for wholesale prices of housebrand on the Gulf Coast averaged 11.33¢ a gal. for 87-octane. In 1957 the Gulf Coast price of housebrand reached its highest level for the past six years at 11.48¢—but the octane had advanced to 92.

Adjusting the price of regular-grade for the crude price advances of 1953 and 1957—based on the refiners' equivalent netback—the "real" price of 92-octane in 1957 averaged only 10.85¢ a gal.

By 1959, the average price of 92-octane at the Gulf had dropped to 10.73¢ a gal.—and the refiners' realization amounted to only 9.8¢ a gal. after adjusting for the crude price hikes.

The oil industry's solution to the auto makers' problem is that premium-grade gasoline should be recommended for those so-called economy engines that do not perform satisfactorily on regular-grade.

The reason is that, in most cases,

NEXT WEEK in Petroleum Week

New tools, techniques, and trends are in the making as the science-art of finding oil moves into one of its most challenging decades.

A look at these developments, and what they mean to geologists, geophysicists, oil companies, supply firms, and others connected with exploratory work will be spelled out in a special report on exploration next week.

a boost of one octane number for regular in the present 92-octane range—which should mean a price increase at the pump of about ½¢ a gal.—would be of no significance in performance to motorists, processors say.

Their reasoning is that, at the current octane range, a three-octane spread is required to produce the difference between "trace" knock and "light" knock.

Processors also openly question whether the new engines are actually more economical to operate. They hint that the true purpose is merely to appeal to purchasers on the basis of the lower price of regular gasoline.

One company has made a correlation on relative economy, using the miles-per-gallon performance of an engine with 7.5-1 compression ratio, using 92.4-octane gasoline, as the base. (The U.S. average service station price was 31¢ a gal. for that grade.)

The study showed that the relative economy of a 9.1-1 compression ratio engine using 98-octane (at 34.3¢ a gal.) with 111% of the base engine, and that of a 10.8-1 engine using 102-octane fuel (at 37.6¢ a gal.) was 121%.

Phillips Makes Rate Offer

A move by Phillips Petroleum Co. to settle its historic gas rate case—now awaiting Federal Power Commission action—may encounter stiff opposition from intervening customers.

The case, initially destined to be a landmark of producer regulation, took a new turn last week.

Phillips proposed that FPC accept the company's current contract rates instead of applying utility-type cost-of-service regulation.

Company officials say they made the offer in hopes of an early decision. A quick ruling, the company said, would "materially reduce the uncertainties and confusion under which the natural gas industry has been operating since June, 1954," when the U.S. Supreme Court asserted FPC jurisdiction over Phillips' rates in an interpretation of the Natural Gas Act of 1938.

Phillips' spokesmen also predicted that settlement of the case would "greatly minimize the possibility of the commission being endlessly challenged in court as a result of the adjustment of all of Phillips' individual rates by the commission."

Customer companies question whether Phillips' offer would settle any of the basic issues.

One attorney, representing a group of East Coast distributing companies, says the Phillips proposal would "avoid rather than resolve the issues."

The attorney, J. David Mann, Jr., says Phillips' offer is "understandable," and that the request to FPC to ratify the company's current contract prices "might even be reasonable, but hundreds of cases turn on the precedents this case is supposed to set."

Spokesmen for other intervenors express the belief that Phillips simply wants to avoid the role of guinea pig before FPC.

Another attorney says he doubts that intervenors will go along with Phillips' proposal because most of them are interested in establishing principles of regulation, not just simple settlement of an individual case.

Many of the issues to be settled center around what are proper costs of doing business.

For example, Phillips, under a cost-of-service approach, would want 60% of its total exploration costs allocated to the search for gas. FPC Examiner Joseph Zwerdling, whose recommendations on the case are now pending before the commission, would credit only 30% to gas.

Similar differences exist on tax treatment of percentage depletion and intangible drilling costs.

Phillips, under the proposed costs plan, would not deduct these tax savings when figuring its total costs. Zwerdling would deduct them.

Phillips contends that FPC can accept its settlement offer and still rule on the issues of the case.

A Phillips spokesman said the new approach by the company will not prevent the commission from addressing itself to each of the controversial questions and resolving them—all in the light of Phillips' present contracts.

Phillips maintains it will lose about $20-million annually under its proffered plan.

The company previously has claimed a cost-of-service of $92.3-million per year, based on 1954 operations. Present contracts, as of Apr. 1, total only about $70.8-million a year in revenue. The settlement offer is based on the

All Active Rigs Now Shown in Report

Operating and non-operating cable tools and rotary rigs on location are counted in a new U.S. drilling activity report, released for the first time last week.

The new report, gathered by regional chapters of the International Oil Scouts Assn., covers all rigs from the time of rigging up to the time of tearing down. It includes those temporarily shut down, or idled by logging, testing, cementing, completing, or fishing operations. The report is released by the American Assn. of Oilwell Drilling Contractors.

Heretofore, information has been available only on those rotary rigs actually making hole.

The new report, which does not yet include complete data for all states, presents a healthier rig activity picture than existing reports indicate.

For example, the existing report of rotaries actually making hole—also released by AAODC—shows only one rig active in Kentucky as of Apr. 4 (see table). The new report, however, shows 27 rotaries and 44 cable tools active in the state on Apr. 1.

	NEW BASIS			OLD BASIS
	Rotary Rigs	Cable Tools	Total Rigs	Rotary Rigs
Alabama	4	0	4	4
Alaska	6	0	6	5
Arizona	3	0	3	4
Arkansas	.....	.....	.....	17
California	120	2	122	81
Colorado	31	27	58*	23
Florida	1	0	1	2
Georgia	1	0	1	.....
Idaho	0	0	0	.....
Illinois	34	12	46	21
Indiana	11	10	21	2
Iowa	0	0	0	0
Kansas	94	12	106	97
Kentucky	27	44	71	1
Louisiana	348	0	348	296
Michigan	.....	.....	.....	33
Mississippi	61	0	61	55
Missouri	1	0	1	1
Montana	14	2	16	12
Nebraska	37	8	45*	26
Nevada	0	1	1*	0
New Mexico	118	29	147	108
New York	.....	.....	.....	1
North Dakota	21	0	21	21
Ohio	.....	.....	.....	5
Oklahoma	.....	.....	.....	197
Pennsylvania	.....	.....	.....	11
South Dakota	1	1	2	2
Texas	806	43	849	635
Utah	29	0	29*	27
Washington	0	0	0	0
West Virginia	.....	.....	.....	4
Wyoming	57	6	63	55
TOTAL U.S.	**1,825**	**197**	**2,022***	**1,746**

*Incomplete Data.

lower total. But Zwerdling when figuring Phillips' cost of service, put the comparable 1954 figure at $57-million.

A Phillips spokesman said the company's offer was made in an attempt to convince FPC "not to apply utility-type regulation" with uniform price for all customers.

Zwerdling computed a uniform field price at 11.6¢ per Mcf. The company maintained that its offer would permit Phillips to continue "historic pricing patterns" in different areas, without reworking all its sales.

In presenting its offer, Phillips said it "does not recede from its position that the $92-million cost of service is its true cost of service.

Phillips' offer was made in four parts:

(1) FPC would accept contract prices as of the date of the commission order accepting a settlement in the case;

(2) The commission would approve all increases now being collected subject to refunds in rate schedules under the original case;

(3) The new rates under two schedules now being renegotiated would be approved when the amended rates are filed; and

(4) The commission will terminate without refunds all rate proceedings filed by Phillips that are not included in the original case.

OCAW Hits 'Outside Contracting'

Elimination of outside contracting for refinery maintenance work will, in all probability, be one of the key objectives of the Oil, Chemical & Atomic Workers Union next fall, when contract demands are set.

A recommendation calling for action to eliminate "this menace to our employment and security" was one of the principal points that emerged from last week's southwestern regional meeting of union delegates.

The Dallas meeting, attended by representatives of 45 OCAW locals in Texas, New Mexico, and Louisiana, was one of a series scheduled by the international union to shape up future bargaining policies and targets.

Others were slated for Washington, Kansas City, Salt Lake City, and Chicago (PW—Feb.2'60,p14) during the first three weeks of April.

The recommendations of all will be sifted by a national conference this summer, and a program will be set up to dictate the tenor and scope of drives and negotiations.

It would seem, however, that the Dallas recommendations, since they are the first, will be the pace-setters for the others.

Outside contracting for refinery maintenance is regarded by many refiners as a more economic method of operating their plants and facilities.

Not only does it have an effect on the size of the payroll, but it enables them to reap fringe benefits. This is particularly important among cost-conscious executives anxious to keep expenses down.

The southwestern delegates recommended that the national conference "study ways and means of protecting us in this field."

In addition to the outside contracting objective, other goals to be sought by OCAW include wage increases and a shorter work week.

The wage proposal suggested a "substantial general increase," with part of it to be applied to fringe benefits.

The union representatives also urged that the companies either pay all of the costs of fringe benefits, or, alternatively, that the union and the management jointly supervise trust funds from which they would be paid.

The shorter-work-week recommendation contended that "currently, we do not have even a 40-hour week," and urged that efforts be made to reduce overtime, and obtain a standby shorter-worker-week clause.

Residual Fuel Quota Is Hiked 12-Million Bbl.

Importers received a surprise increase in their resid allocations this week, an across-the-board boost averaging about 15.5% for 32 companies.

In round figures, this means the authorized level for the first half of 1960 has been raised to 490,933 b/d, up 65,933 b/d when allocated for the six months' period to June 30.

But it's still considerably below the 300,000 b/d increase that importers had been seeking. The authorized increase is 11,999,784 bbl., to make the total allocation 89,349,784 bbl.

The increases granted, total new quotas, and the remaining portions of quotas permitted for importation prior to June 30 are:

	Authorized Increase (in barrels)	Total Quota	Unused Quota to 6/30/60
Ashland Oil & Refg.	5,448	40,574	40,574
Atlantic Refining	9,504	70,838	9,515
Ballard Oil	102,684	764,618	437,804
Belcher Oil	55,308	411,846	222,592
Buckley Bros.	148,764	1,107,722	573,710
Canadian National Rys.	696	5,246	3,504
Central Petroleum	107,652	801,618	291,071
Colonial Oil Industries	131,064	975,908	594,539
Copeland Terminals	444	3,356	805
Gulf Oil	70,692	526,420	298,973
George Hall Corp.	12,444	92,706	85,213
Hess, Inc.	1,362,786	10,146,998	3,651,944
Inland Terminal	468	3,562	3,562
Kaneb, George T.	924	6,930	6,930
Metropolitan Petroleum	744,252	5,541,590	1,760,390
U.S. MPSA	48,108	358,236	224,740
New England Petroleum	298,356	2,221,550	753,064
Pure Oil	14,088	104,906	14,088
Royal Petroleum	87,864	654,248	204,558
Shell Companies	610,380	4,544,856	2,004,187
Signal Oil & Gas	248,976	1,853,852	1,320,952
Sinclair Oil	9,984	74,412	9,994
Socony Mobil	8,892	66,222	48,127
C. H. Sprague & Son	752,748	5,604,868	2,750,406
Standard (Calif.)	22,248	165,664	156,906
Standard (Ind.)	759,048	5,651,754	3,209,845
Standard (Ky.)	387,384	2,884,424	1,371,054
Standard (N.J.)	3,648,216	27,164,072	4,146,714
Steuart Petroleum	136,536	1,016,688	381,597
Texaco Inc.	1,935,012	14,407,836	4,205,780
Whale Oil	10,524	78,410	10,524
White Fuel	268,308	1,997,854	1,457,169
Totals	11,999,784	89,349,784	30,250,831

Exhaust 'Bill' Hits California Drivers

California's precedent-setting smog-control law will have, ultimately, a multimillion-dollar impact on motorists there—perhaps as much as $825-million as a starter.

A bill requiring afterburner devices on car exhausts in most of California was passed by the state legislature last week.

Estimates range from $50 to $150 for control devices which motorists will have to install on vehicles in all counties that have air-pollution problems.

Los Angeles County, which has probably the biggest concentration of cars and motorists in the country—and the biggest smog headache, too—will be hit hardest by the legislation.

It boasts a car population of 2.8-million—almost 40% of the state's total registration.

Thus, the $50 to $150 range would mean motorists' expenses of $140-million to $420-million for afterburners. On the assumption that three-fourths of the state's registered vehicles would be affected, the same ratio would mean purchase and installation costs of $275-million to $825-million.

What the law will mean to the petroleum industry in the long run, in terms of gasoline consumption and service problems, is conjectural.

Until the afterburners are road-tested by experience, it will be difficult to determine the effect they will have on fuel consumption.

California, for years, has been the nation's biggest gasoline market.

Service stations, sooner or later, will inherit the repair and replacement problems—for, like mufflers, the afterburners will have to be maintained and replaced.

Other states with incipient smog problems will watch California closely. The Golden State legislation is the first of its kind to be enacted, although it is not necessarily the first to be proposed. New York State had a similar bill in the last legislative session, but it died in committee.

Smog-control officials and oil industry spokesmen alike hailed the step as a concrete move to help affected areas.

S. Smith Griswold, director of the Los Angeles Air Pollution Control District, predicted the measure would mean an end to smog in Southern California within five to six years.

Felix Chappellet, vice-president of the Western Oil & Gas Assn., commended the legislature in these words: "It has been conclusively shown that the automotive exhaust is the primary cause of smog."

It's a question, though, when the certified afterburner devices will be available on a mass basis.

Automobile industry spokesmen, after a series of uncoordinated and perhaps premature statements on various control devices under development, are now becoming reticent.

Present devices known in Detroit are considered still in the experimental stage.

But the real bug is mass production. It will take time to tool up and distribute approved devices.

15 States Top Reserve Ratio

	Production		Proved Reserves		
	1959 (thous. bbl.)	Percent of U.S. total	1959 (thous. bbl.)	Percent of U.S. total	Years' Supply (vs. 1959 prod.)
Ala.	5,609	0.2%	34,248	0.1%	6.1
Ark.	24,822	1.0	312,911	1.0	12.6
Calif.*	307,158	12.4	3,762,507	11.9	12.2
Colo.	46,112	1.9	380,952	1.2	8.2
Ill.	76,577	3.1	594,407	1.9	7.8
Ind.	11,475	0.5	73,951	0.2	6.4
Kan.	118,938	4.8	917,503	2.9	7.7
Ky.	28,250	1.1	136,324	0.4	4.8
La.*	318,357	12.8	4,660,088	14.7	14.6
Mich.	10,535	0.4	55,335	0.2	5.2
Miss.	47,331	1.9	389,337	1.2	8.2
Mont.	30,367	1.2	309,268	1.0	10.1
Neb.	22,710	0.9	80,558	0.2	3.5
N.M.	102,341	4.1	1,025,789	3.2	10.0
N.Y.	1,966	0.1	34,197	0.1	17.3
N.D.	17,868	0.7	381,909	1.2	21.3
Ohio	5,992	0.2	74,137	0.2	12.3
Okla.	193,446	7.8	1,864,749	5.9	9.6
Pa.	6,158	0.2	113,574	0.3	18.4
Texas*	939,001	37.8	14,859,674	46.8	15.8
Utah	39,962	1.6	194,539	0.6	4.9
W.Va.	2,165	0.1	51,259	0.2	23.6
Wyo.	125,323	5.0	1,402,938	4.4	11.1
Misc.	852	0.03	9,193	0.03	10.7
Totals	**2,483,315**		**31,719,347**		**12.8**

*Includes offshore reserves

All but eight of the leading producing states exceeded the percentage relationship between their output and their share of the nation's proved reserves in 1959.

In other words, California, for example, accounted for 12.4% of the 1959 crude production, although it had only 11.9% of the reserves.

Other states in the same category were Alabama, Colorado, Illinois, Indiana, Kansas, Kentucky, Michigan, Mississippi, Montana, Nebraska, New Mexico, Oklahoma, Utah, and Wyoming (table).

Conspicuously missing from the group were Texas and Louisiana—the two largest producers, and the possessors of the biggest shares of U.S. reserves.

Texas, with 46.8% of the reserves, accounted for 37.8% of the production. Louisiana, with 14.7% of the reserves, produced 12.8% of the 1959 domestic crude.

Other states in this smaller group were Arkansas, New York, North Dakota, Ohio, Pennsylvania, and West Virginia.

The 1959 crude production, according to the reserves figures compiled by the American Petroleum Institute, was equal to 7.8% of the total of proved reserves.

What's New / IN THE INDUSTRY

Indiana Oil Purchasing and Sinclair Crude Oil have agreed to protect marginal operators in Kansas while they prorate their take of crude.

Both companies recently cut their crude purchases to 80% of January runs. The agreement between the Kansas Corporation Commission and Indiana specified that no lease will be prorated to an amount which is less than the number of producing wells located thereon multiplied by 13 bbl. The Sinclair agreement is the same except that it specified 11 bbl.

The commission held that many low-producing wells, if out, would never be able to make up their loss.

•

San Jacinto Petroleum Corp. has agreed to sell its one-half interest in some Louisiana producing properties to General American Oil Co. of Texas for over $27-million.

The properties are those of Mecom Petroleums, a partnership of San Jacinto and John W. Mecom, Houston. They consist of interests in the Block 45 field, offshore Cameron Parish; the Johnson's Bayou field, Cameron Parish; and the Hollywood, Delta Farms, and other fields in southern Louisiana.

Earlier this year, General American announced it would acquire Mecom's interest in the properties for $27-million.

The transaction did not involve any of the nonproducing properties of Mecom Petroleums. Also excluded were San Jacinto's interests in other producing and nonproducing properties in southern Louisiana and south Texas not owned through Mecom Petroleums.

•

An FPC examiner has recommended that St. Lawrence Gas Co. be permitted to serve the disputed Massena-Ogdensburg area in New York. But Canada has already refused to allow export of natural gas for the project (PW—Apr.8'60,p23).

St. Lawrence Gas wants to import 8,240,000 cf/d from Niagara Gas Transmission, Ltd., and build $6.7-million worth of facilities over the next six years. Both companies are subsidiaries of Consumers Gas Co., Toronto.

The Canadian project was approved by FPC Examiner Howell Purdue over a rival plan proposed by New York State Natural Gas Corp. and Niagara Mohawk Power Corp. The latter plan was also opposed by the FPC staff—not favored as reported in PETROLEUM WEEK last week.

Canada barred the gas exports, questioning the adequacy of the proposed price. The Canadian ruling has been appealed by St. Lawrence and Purdue conditioned his opinion on the granting of Canadian permits.

•

Gordon Simpson, of Dallas, will head up the new ways and means committee which the Independent Petroleum Assn. of America set up to study the causes of depressed conditions in the oil industry.

Simpson, president of General American Oil Co. of Texas, served as IPAA president in 1958-59. Committee vice-chairman will be Harold Decker, president of Highland Oil Co., Houston. In all, 41 oil men are on the committee.

The group will hold its first meeting in Denver Apr. 25, in connection with IPAA's midyear meeting. Problems to be discussed include static oil production, high stocks, refinery runs, rising cost, and the "flight of capital" from the oil industry.

•

A new gas-lift technique promises to cut production costs on a single well by as much as 75%.

Its developer, Garrett Oil Tools, reports that the method—called "Opti-Flow"—involves a wide range of master curves covering nearly all well and production situations. By using the master curves, operators can realize savings in compressor horsepower requirements and in over-all operating costs.

The master curves, developed from a mathematical formula programmed through an electronic computer, provide quick answers to such gas-lift problems as depth and pressure to inject gas for maximum return at minimum compressor horsepower, size of tubing that should be used, and how to get full operating pressure to the point of injection without excessive loss on deep wells.

WELL CORROSION?

inhibitor squeeze with

CORBAN

The "squeeze" method of applying Corban®—the Dowell family of corrosion inhibitors—involves pumping the inhibitor through the tubing string into the producing formation. The metal parts contacted by the Corban receive a protective film of inhibitor. As the well is produced, Corban from the formation maintains this protective film for an extended period. "Squeezing" with Corban has been especially beneficial—particularly in wells previously difficult to treat. Get an engineered recommendation from Dowell on the use of Corban.

Products for the oil industry

DOWELL

DIVISION OF THE DOW CHEMICAL COMPANY

DIAL DOWELL

Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
April 15, 1960

The new, higher level of residual fuel oil imports points up the Administration's desire to follow a middle-of-the controversy policy. The latest boost—from 425,000 b/d to almost 491,000 in Districts I-IV through June (page 13)—came as a surprise to many, following some recent statements by Under Secretary of the Interior Elmer Bennett. Bennett's letters to the National Coal Policy Conference and to Standard Oil Co., (N.J.) indicated a reluctance to increase the residual import level. But the new level came in pronouncement also signed by Bennett. The switch came after the Interior Dept. was caught in an oil-vs.-coal political squeeze.

•

Major importing oil companies were seeking an additional 300,000 b/d—but received only 65,933 b/d, when spread out over the full first six months. The companies had urged the Interior Dept. to adopt the higher figure, claiming that it was necessary to meet market shortages and to rectify an alleged 90,000 b/d error made by the government in figuring the old 425,000 b/d level.

The coal industry wanted a cut in residual imports, but now it is not entirely unhappy with the outcome. Publicly, coal leaders will protest the new increase. Privately, they feel some pleasure that it was not as large as the oil companies wanted. Shortly before the increase was announced, Joseph E. Moody, president of the Coal Policy Conference, said he would seek a congressional investigation of attempts to "sabotage" the imports curbs.

The Interior Dept. blames the increase mostly on "the irregular marketing pattern of a few major importers"—identified by the coal lobby as Jersey, Paragon (Owned by Texaco), and Hess. They "have already exhausted or virtually exhausted their initial six months' allocation," the department said. To avoid future difficulties, Interior, starting July 1, will establish residual fuel oil levels on a quarterly basis.

Standard Oil Co. (N.J.) received the lion's share of the increase—3.6-million bbl. out of a 12-million total for the three-month period.

•

Watch for a loose-knit alliance of independent producers and coal men in the impending push for a natural gas bill. Producers believe they must have coal-industry support for any new gas legislation. In exchange, coal interests may ask producer help in pushing through Congress a study of competitive fuels.

•

A change of heart by Federal Power Commissioner William R. Connole has sparked a sectional fight over his reappointment. Reliable sources close to Connole say the commissioner had almost decided, several months ago, not to accept reappointment when his present term expires in June. But when a group of gas producers began complaining to the White House that he should be removed, a surge of protest from Connole's friends and acquaintances caused him to change his mind. In recent weeks, there has been a pitched battle between the anti-Connole producers and several governors, state regulatory agents, industrialists, and consumers, plus some gas distributors who were demanding reappointment.

ROYAL TANK TRUCK HOSE

THE PERFECT LINK

BETWEEN TANK TRUCK AND SERVICE STATION

U. S. Royal Tank Truck Hose is the only hose your tank trucks need carry. It's a two-hose in one, for both suction and discharge—saves the driver the time-wasting nuisance of hooking one hose up for suction, and another hose for discharge. This Tank Truck Hose is lightweight, flexible, and still is highly kink-resistant. The Neoprene cover is compounded so as to be resistant to oil, weather and abrasion. Despite the toughness, its flexibility lets it conform to every movement of the operator.

This hose is one of the complete line of "U. S." oil marketing hose—each hose in the line is a time-and-work saver with superior features for specific jobs.

• • •

Get U. S. Royal Tank Truck Hose or any of the "U.S." oil marketing hose from your Oil Equipment Jobber or write address below.

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

The weld you spread with a knife

Do you still weld shoes and collars to casing?

Bakerlok makes a stronger (and safer) joint -and at lower cost

Operators tell us that once you've used Bakerlok to lock shoes and collars to casing, you don't want to work without it.

Bakerlok makes a stronger casing joint than tack welding, and does it for a lot less money.

And note this: Bakerlok makes a safer joint, too. It doesn't weaken your casing as arc-welding sometimes does. Most operators are using Bakerlok on the strength of this point alone.

These are not mere claims. Thousands of successful field runs prove Bakerlok's success beyond any doubt whatever.

BAKER

BAKER OIL TOOLS, INC.
Houston
Los Angeles/New York

Bakerlok kit contains 8 ounce can of compound, activator, and putty knife. Kit is available at supply stores all across the country.

Get the important facts on Bakerlok from Baker Catalog Supplement 356. Write Baker Oil Tools, Inc., P.O. Box 2274, Los Angeles 54, California.

Why Baker Recommends Bakerlok

Bakerlok was developed to help operators get the best possible service out of Baker casing shoes and collars. Our interest is natural, since Baker is the world's largest manufacturer of shoes and collars. In Baker's opinion, arc-welding is not a satisfactory way to lock shoes and collars to casing. Bakerlok does everything welding does, does it faster, and does it without the harmful weakening effect of arc heat on high-grade steel casing.

Apply Bakerlok with putty knife to first ⅔ of pin threads only. 8 ounce can locks six 5½" joints.

Southwestern Wyoming Paces Rockies

The southwest corner of Wyoming has developed into one of the most promising oil and gas areas in the entire Rocky Mountain region.

This area is covered by the Green River Basin, which also dips south into Colorado and Utah.

Several important oil and gas fields have been opened in recent months and the tempo of exploratory and development drilling continues to step up.

Most of the oil discoveries have come since the fall of 1959. Before that time, oil production was of little consequence in the basin, where exploration had been directed principally toward gas, with considerable success.

The area, however, is still one of the more sparsely drilled sections in the Rockies, leaving room for success in both oil and gas.

On the other hand, there has been scattered exploration in the basin for many years. Some of the oldest production in the Rockies came from seeps and shallow wells in the Spring Valley area east of Evanston, Uinta County, in the extreme southwest corner of the state.

Real gas development came only after Pacific Northwest Pipeline Corp. built a trunk facility across the southwest corner.

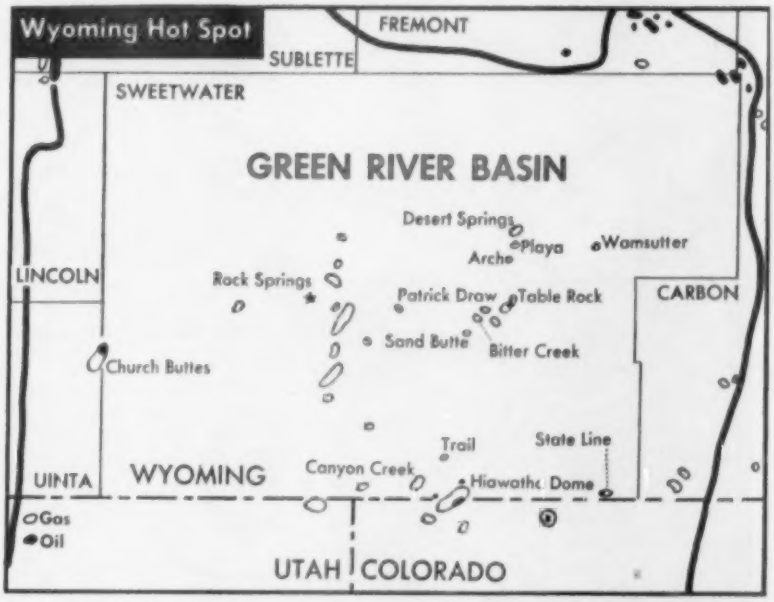
At the moment, Sweetwater County is the focal point of the most important activity in the Green River Basin.

The county is large enough to take in any number of ambitious developments. It borders Colorado on the south for some 115 mi. and is from 80 mi. to 90 mi. from north to south. Its more than 10,000 sq. mi. amount to nearly one-ninth of all Wyoming and make it bigger than several states.

There have been some 300 holes drilled in the county, all told, with nearly half of these concentrated in the older North, Middle, and South Baxter areas, east of Rock Springs.

But the drilling picture in the county is changing fast. This is one of the major reasons why Wyoming was able to regain the lead in total drilling among Rocky Mountain states last year, and why many say it will stay in the lead for some time.

In 1958, for example, Sweetwater County had 8 of Wyoming's 29 discoveries. The county successes came from 24 wildcats. In 1959, the number of wildcats in the county jumped to 50, of which 9 were discoveries. These discoveries made up almost one quarter of Wyoming's total of 40 that year.



SOUTHWEST CORNER of Wyoming is covered by the Green River Basin. Recent oil discoveries on top of continuing gas finds have sparked intensified exploration here.

In the first ten weeks of this year, ten wildcats were drilled in Sweetwater, including three more discoveries.

At the end of March this year, 27 tests were being drilled in the county by 15 different operators.

Sweetwater County, like most of Wyoming, has a high percentage of federal (public domain) land. Much of this acreage has been unitized.

Much of this land has been leased for several years, and both individuals and large companies hold leases there.

Most of the units have been approved by the U.S. Geological Survey within the past three years. This removes the land from the total acreage chargeability of the lessees under federal regulations. It also leads to more efficient operations and exploratory programming.

As of Jan. 1, 1960, there were 166 such units, producing and non-producing, in all of Wyoming. Of these, 34 units, comprising more than 736,000 acres, are in Sweetwater County. In addition, several units are proposed or pending.

The rise of unitization generally parallels the rise in successful exploration. No less than 23 of the 34 units listed as of the first of the year were approved in 1958 or 1959.

Most of the unitized blocks in the county are quite large, ranging up to the more than 80,000 acres within Ohio Oil's Wamsutter unit at the eastern edge of the county. The average is close to 20,000 acres per unit.

Today's major activity in the county grows from the relatively new awareness of the potential of the Montana group of upper Cretaceous rocks, usually referred to as Mesaverde.

Before 1950, not more than a handful of wells north of the San Juan Basin in New Mexico had found production or significant shows in Mesaverde.

Since that time, important exploration based on formations of this age has successfully swept the Powder River Basin of Wyoming, the western half of Colorado, part of eastern Utah, and southwestern Wyoming.

Most of Sweetwater County's recent discoveries and current activity lie east of the Rock Springs Uplift.

Deepest significant success on the west side of the uplift is at Church Buttes, where Mountain Fuel Supply Co. developed deep Dakota gas production more than ten years ago.

Reservoirs under development east

Quaker Thermoid FLOATER HOSE AT WORK IN FROBISHER BAY

Quaker Thermoid 600 foot continuous-length Floater Hose speeds ship-to-shore oil transfer!

Increased air traffic over the polar route has called for an immense new airfield and oil-piping system at Frobisher Bay, Baffin Island, just completed by Foundation Company of Canada Limited.

Tankers pump petroleum products through a 600-foot Thermoid-Quaker Floater Hose assembly to a 15,000-foot pipeline feeding the huge tank farm at Frobisher. An 8" Thermoid-Quaker discharge hose is floated on special inflatable Thermoid-Quaker pontoons and reeled on a power winch. This three-part rig makes up the complete Thermoid-Quaker assembly.

You do away with bulky metal drums for floating hose when you use this new Thermoid-Quaker rig. Inflatable floats take up less than a quarter of the space formerly required by floating drums. And the hose comes in such long sections that couplings are reduced by as much as 90%.

If you load or unload tankers off-shore, investigate the Thermoid-Quaker Floater Hose combinati n. Ask the Thermoid distributor, or write *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

THERMOID PORTER DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.

of the uplift are substantial. The Almond, to date the most productive, is defined as the youngest Mesaverde formation of the Montana group. The type section outcrops at the old Almond stage station. The formation varies from 542 ft. in thickness at the outcrop to between 650 ft. and 700 ft. at the north and south ends of the uplift. Deposition was in a shallow marine embayment represented by the area now under exploration.

Sediments equivalent to Almond on the west side of the uplift (at Church Buttes) are believed to have been eliminated by truncation during late Cretaceous uplift.

Lewis shale, overlying the Almond, and containing productive members at Desert Springs, also appears east, but not west, of the uplift. It thickens from a few hundred feet at the outcrop east of Point of Rocks to about 1,400 ft. in the Table Rock area.

While several gas discoveries in the Mesaverde were made in various sections of the county during the past few years, real interest wasn't generated until oil was found in the Almond late in 1959.

The oil discovery was El Paso Natural Gas Products Co. No. 1 Patrick Draw unit, section 1-18n-99w, west of Table Rock and south of Desert Springs fields. It flowed 637 b/d of oil through ¾-in. choke and perforations at 5,182-98 ft.

Later completions at Patrick Draw were comparable. And late in March this year, Gulf Oil Corp. No. 1 UP-State, section 36-19n-99w, flowed oil at the rate of 53½ bbl. per hour through ½-in. choke. The prospect is a bit more than 1 mi. north of the field discovery. Testing continues.

Shortly after the El Paso discovery, Texas National Petroleum Co. No. 1 Govt.-Withers, section 32-20n-99w, 7 mi. northwest of Patrick Draw, was completed for 300 b/d through 18/64-in. choke and perforations at 3,556-616 ft. in the Almond. This shallower field now has nine producers or prospects, with more work in progress.

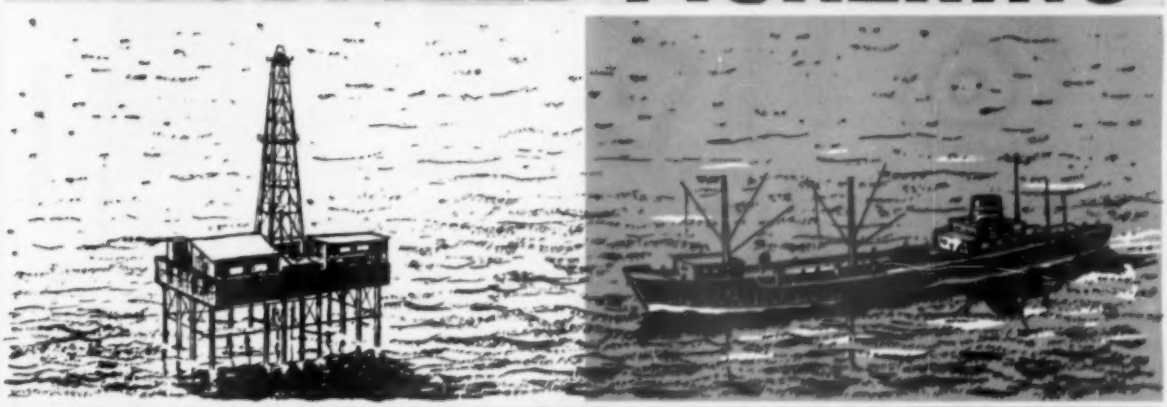
Also early this year, Scimitar Oil Corp. and Emmet Schieck, a Casper independent, drilled a hole in section 10-18n-98w, at the southwest end of Table Rock. Early reports showed good flows of gas, which were not unexpected. But completion of the test as an oil producer for 875 b/d through perforations at 6,781-801 ft. in the Almond came as a surprise. The well is 3 mi. southwest of marginal oil production.

Significant gas discoveries are still being made.

Forest Oil Corp. completed a 15-

ALL TYPES OF OFFSHORE DRILLING UNITS AND TENDERS

WOODFIELD PICKERING



DO THE WHOLE JOB !

The linking together of the engineering skills of WOODFIELD ROCHESTER LTD., and R. Y. PICKERING & CO. LTD., makes possible, for the first time in Britain, the full construction—*by one organisation*—of complete off-shore drilling units and tenders and the supply of the whole of the ancillary equipment.

Woodfield Rochester builds drilling and associated production equipment (British Licensees of IDECO since 1952): Pickering excels in specialist engineering. The Fairfield Shipbuilding & Engineering Co. Ltd., members with Pickering of the Lithgow Shipbuilding Group, will carry out the necessary hull building work.

WOODFIELD PICKERING LIMITED

147, VICTORIA STREET, LONDON, S.W.1 Telephone: TATe Gallery 4135

Telegrams: WOODFIELD, TELEX, ROCHESTER

million cf/d gas discovery on the Arch unit, in section 9-19n-98w, about midway between Table Rock and Desert Springs.

A few weeks ago, Continental Oil Co.'s Sand Butte unit wildcat in section 5-17n-99w, 15 mi. south and a little west of Patrick Draw, was completed for 10.6-million cf/d of gas from the Almond at 4,616-830 ft.

In addition to these, there were several significant gas discoveries completed in the county in 1958 and 1959, in the Almond or Lewis shale.

Most of the recent oil and gas discoveries are in the Desert Springs-Table Rock area. But these have been successes in other parts of the county.

Notable among these are Gulf's Tertiary and Cretaceous gas and oil success at the State Line unit, in the southeast corner of the county, just above the Colorado line.

Further, operators have found that air or gas drilling, or use of oil-based mud, has forestalled blockage of the Mesaverde sands. This, along with wide use of sand fracturing, has contributed to operator success.

East Texas Jurassic Play Expands

A Smackover lime discovery in eastern Delta County has broadened the fast-growing Jurassic play in East Texas.

The discovery is the county's first. In addition, it raises to 15 the number of Jurassic pay areas established in East Texas (PW—Feb.19'60,p.29).

Ten of these are in the Smackover, the third member of the Jurassic. Four are in the Cotton Valley and one is believed to be in the Buckner.

Other East Texas counties where Jurassic production has been established are Bowie, Cass, Marion, Harrison, Franklin, Hopkins, Rains, Van Zandt, Navarro, and Limestone.

Of the 15 Jurassic discoveries so far, 11 produce gas-condensate, 3 produce oil, and one yields dry gas.

The Delta County discovery is the first Jurassic producer outside the Mexia-Talco fault system.

All of the other Jurassic pays have been found inside the fault belt, or south or east of the arc-shaped fault.

The Delta discovery, Gibson & Best No. 2 V.A. Young, John Haze survey, 10 mi. northeast of Cooper Townsite, is just north of the fault system.

Nearest Smackover completion to No. 2 V.A. Young is Grelling Estate No. 1 Basham, 11 mi. southeast at Sulphur Bluff (Paluxy) field.

Production at the discovery has been gauged at 5-million cf/d of gas plus 7 bbl. of condensate per million. The gas, unlike that from other Smackover producers, has no hydrogen sulfide.

The condensate, of undetermined gravity, is dark green in color.

Total depth of the hole is 7,100 ft. Some 175 ft. of Smackover was logged after being topped at 6,918 ft. Casing was run to 7,096 ft. and perforated at 6,918-22 ft.

No explanation is offered for the gas being free of hydrogen sulfide, but conjecture is that it stems from the hole's geologic position outside the fault system.

Deep salt deposits inside and along the system are believed to influence the chemical composition of the gas that has been found in the other Smackover wells.

The discovery was made by redrilling an abandoned shallow hole.

R. L. Gibson and H. M. Naylor drilled three Paluxy tests, one of which was No. 2 Young. This test was abandoned at 3,498 ft. Prior to this, the partners had drilled No. 1 Young 1,100 ft. southeast of No. 2 Young.

No. 1 Young was abandoned at 7,806 ft. after a small gas show at 6,958 ft. in the Smackover.

After the Paluxy failures, Gibson joined Walter C. Best, moved back into No. 2 Young and drilled to the Smackover to result in the discovery.

Drilling into the Jurassic in East Texas has steadily gained momentum during recent months.

There are nine Jurassic wildcats at present in East Texas.

One of these, Pure Oil and Texaco No. 1 J. G. Flatt unit, V. B. Hubbard survey, 7 mi. west of Martins Mills, Van Zandt County, has had oil shows in the Cotton Valley.

WANT TO TURN MAINTENANCE DOLLARS INTO PROFIT DOLLARS?

Tom Robertshaw can show you how. Tom's a paint expert—one of a growing force of specialists that constitutes Du Pont's Technical Service Group. His mission: to help you pare down the high cost of maintenance painting. As he sees it:

"Every maintenance dollar you save is a profit dollar. Of course, to insure maximum return on your investment, you've got to begin with quality paint. Too many maintenance men have learned the costly lesson that price-per-gallon as a measure of economy can be mighty misleading. When you specify Du Pont, you're getting the best paint available, backed up by proven performance in the field.

"However, that's only half the story. To bring down the cost of protecting your equipment—and keep it down—the right paint *system* is vitally important. Here's where Du Pont technical competence really pays off. We see to it that the system you employ is specifically suited to your needs. Our recommendations, based on a thorough study of your particular problem, cover everything from surface preparation and paint selection to the most efficient methods of application. We'll show you, too, how to use color effectively to improve plant appearance and promote safety. It adds up to this: lasting protection and longer service life *at lowest cost per square foot per year.*"

There are men like Tom Robertshaw working out of Du Pont district sales offices from coast to coast. Why not let one of them put his training and experience to work for *you?* Call the office nearest you, or write: E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Dept. PW-64, Wilmington 98, Delaware.

* * *

Thomas J. Robertshaw began his career with Du Pont in 1938. Following wartime Navy service as an Aircraft Finishes Specialist, he returned as Assistant to the Sales Technical Advisor in Philadelphia. In 1952 he was made responsible for Maintenance Sales in New England and upstate New York. Since 1957, he has been Central District Manager, Industrial Maintenance Sales. Among the industries for which he has solved maintenance painting problems: marine, automotive, chemical, steel, petroleum and food.

DU PONT PAINTS

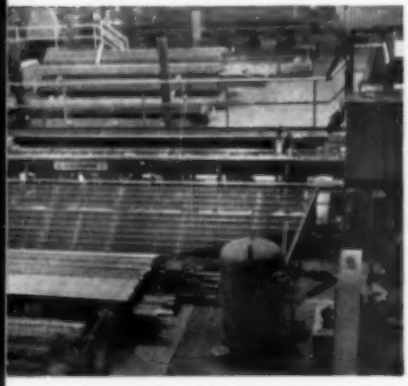
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

75

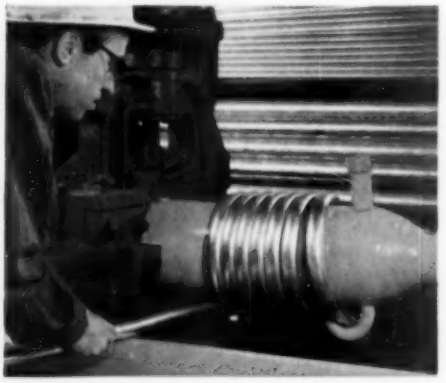
There are 75 reasons why J&L tubular products are of highest quality

J&L makes over 75 tests and inspections of its tubular products. Here are 18 of them. This stringent control assures a quality never before attainable in the industry.

1 This ultra-sonic tester is one of the most advanced process control devices used in pipe-making. It provides an immediate picture of weld soundness in all J&L Electricweld Line Pipe.



8 Five lengths of Jal-Con-Weld standard pipe undergo simultaneous pressure testing on this modern Schloemann hydrostatic tester.

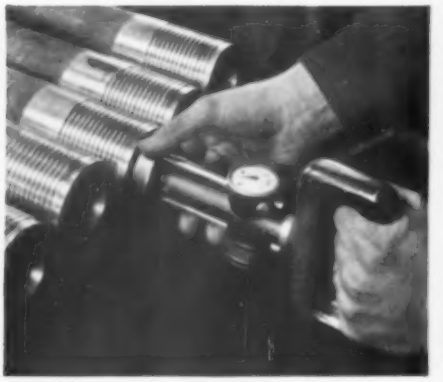


9 Here Jal-Con-Weld standard pipe is being wound around a mandrel. This is another test of the ductility of the pipe and the strength of the welds.

10 This is a flattening test to determine strength of the weld, ductility and other qualities of the steel in Electricweld Line Pipe.

14 These inspectors are checking thread alignment on Buttress Thread Couplings. Proper alignment is essential to good stabbing and true spinning of casing joint.

15 Each length of J&L Quench and Temper high-strength casing is subjected to full-length magnetic particle inspection. The slightest surface defect is distinctly visible under the ultraviolet light.



16 This inspector is testing the angle and diameter of the sealing member on pin end of Grayloc Tubing. All dimensional characteristics are checked for accuracy.

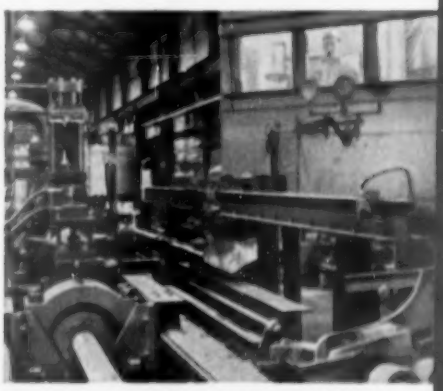
2 J&L inspectors are taking a steel sample from a basic oxygen furnace for thorough chemical analysis. A record of each heat is kept all through the manufacturing process.

3 This Spectromet unit provides a simultaneous analysis of alloying elements in the J&L steel used for tubular products.

4 In a J&L laboratory, this metallographer is examining the structure of a steel specimen.

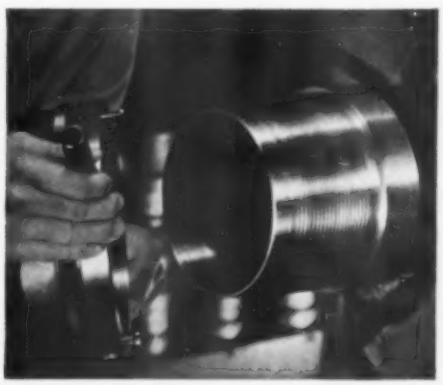
5 This J&L laboratory technician is testing a specimen cut from finished pipe to determine its compliance with specified yield, tensile and elongation requirements.

6 This milling machine operator is cutting the notch in a specimen for Charpy impact test. The Charpy test determines notch toughness of the steel.



7 This is the world's highest—pressure production tester. It is capable of applying hydrostatic pressures up to 20,000 pounds per square inch.

11 This skilled inspector is examining the internal surface and ends of J&L casing to insure further the final high quality of the product.



12 This is one of many dimensional measurement checks made on each joint of Extreme Line Casing (produced under license from National Supply Company).

13 Jones & Laughlin inspector, with surveyor-type transit, carefully checks thread alignment on integral joint drill pipe.

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

17 Upset ends of Blue Ribbon and Blue Ribbon Vanadium Drill Pipe and P-105 grade tubing are shot blasted to provide clean surfaces for magnetic particle inspection.

18 This modern collapse testing equipment exerts pressure up to 25,000 pounds per square inch . . . exceeding all published requirements.

Salinas Valley Drilling Increases

Drilling activity is picking up in California's Salinas Valley.

Operators are taking a close look at the valley, which is the fifth-largest tertiary marine sedimentary basin in the state.

The valley, which extends north from Atascadero some 110 mi. to Monterey Bay, is bounded by the Sierra de Salinas, the Gabilan Range, the Santa Lucia Range, the La Panza Mountains, and the San Andreas rift. It is about 25 mi. across at its widest point.

Operators holding leases in the area include Barron Kidd; Beach, Church & Bell; Continental Oil Co.; W. W. Holmes; Intex Oil Co.; MJM&M Oil Co.; Mobil Oil Co.; Mohawk Petroleum Corp.; Ohio Oil Co.; Shell Oil Co.; Texaco Inc.; Tidewater Oil Co.; and Richard R. Thorup.

Most of the drilling is being done in the vicinity of the newly found King City field, Monterey County.

Thorup opened King City field after moving into the area, last fall and drilling one dry hole, which was abandoned at 1,597 ft.

He then moved 2 mi. south and completed his second test for about 60 b/d of 15-gravity oil through perforations at 2,009-130 ft.

The third try, No. 3 Thomas Doud Estate, an offset to the second, is credited with quickening interest in the area. It was completed for 452 b/d of 16-gravity oil through perforations at 2,034-139 ft. in an unnamed sand of Middle Miocene age.

Thorup plans development of his 3,200-acre lease and will drill near his first wildcat, which encountered some thin sands but wasn't tested.

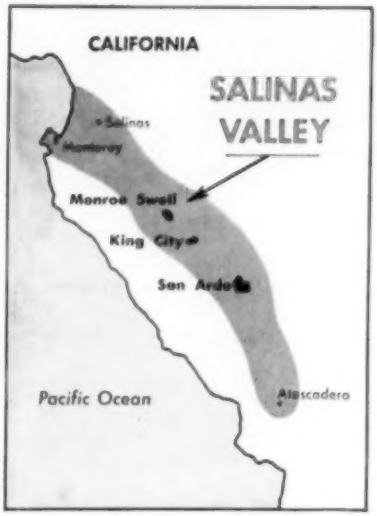
Holmes, who drilled a dry hole about 1,800 ft. southeast of production, finding permeable sand with some shows, plans to move about 500 ft. east of this hole to try again.

Beach, Church & Bell plan on drilling two extension tests, one about 3,000 ft. west of Thorup's production, the other to the southeast.

In addition, several other exploratory projects are under way or planned in the Monterey County portion of the valley.

Continental Oil has moved in on the Gabilan Mesa 16 mi. southeast of King City field and 9 mi. northeast of San Ardo field for the first in a series of three coreholes.

The company plans to go about 2,000 ft. to basement at No. 1 Echeberria, section 25-21s-11e.



In the Pine Creek area, 4 mi. north of San Ardo production, Shell has staked location for No. 73X-3 Orradre, section 3-22s-10e.

King Ardo Oil Co. No. 1 Ansberry, section 2-22s-9e, 6 mi. northwest of San Ardo in the Parris Valley area, is temporarily idle at 704 ft.

The staying power of the second producer in King City field, unlike some earlier wells in the valley, was a big factor in stimulating activity.

During a recent 28-day test of the well, No. 3 Thomas Doud Estate, net production amounted to 11,000 bbl. of 16- to 16.2-gravity oil.

The pump was shut down on the last day of the test and the well flowed 181 bbl. in 12 hours through ¾-in. choke.

Production in King City field apparently comes from an anticlinal trap.

The Thorup tests were located mainly on the basis of a surface anticline, with only a limited amount of subsurface information.

The productive formation is likely to be called the Thorup sand.

Most of the production in the valley comes from San Ardo field, one of the largest reservoirs of low-gravity crude in California.

Texaco Inc. discovered the field in 1947 to give the valley its first commercial production, some 50 years after the first wildcat was drilled there.

At present, there are 692 wells in the field, producing 31,055 b/d of 10- to 12-gravity oil.

The only other production in the valley besides San Ardo and King City is the one-well Monroe Swell field, 10 mi. northwest of King City field. It was discovered last year by Bandini Petroleum Co. The well is averaging 32 b/d through perforations at 2,995-3,174 ft. in the Upper Miocene.

'Attic,' 'Cellar' Oil Is Recovered

Field results for both the "attic" and the "cellar" methods of secondary oil recovery indicate that both types can be utilized successfully.

The attic method involves the injection of gas into the reservoir through previous producers, with the gas migrating updip to displace crude.

The cellar method involves the injection of "heavier-than-oil" fluid in an updip well in order to "float out" downdip oil.

The Houston chapter of the American Petroleum Institute's Division of Production was told last week how both methods are achieving economic results.

Tidewater Oil Co., utilizing the attic recovery method in the Venice field, South Louisiana, is displacing an estimated 120,000 bbl. of oil from the updip region of one reservoir.

John Broom, the company's South Texas district engineer, said that 208-million cu. ft. of gas were injected into the B-55 reservoir of the field during a four-month period beginning Jan. 13, 1958.

"Following gas injection, the [production] well began producing clean oil at a normal flowing tubing pressure and gas/oil ratio," Broom said. "It has already produced 60,000 bbl. of updip oil, and an additional 85,000 bbl. is anticipated before the well again waters out.

"We recently injected an additional 50-million cu. ft. of gas when the well began producing a small amount of salt water. Apparently, there is still additional attic oil in the reservoir, since the gas/oil contact is still some distance above the perforated level."

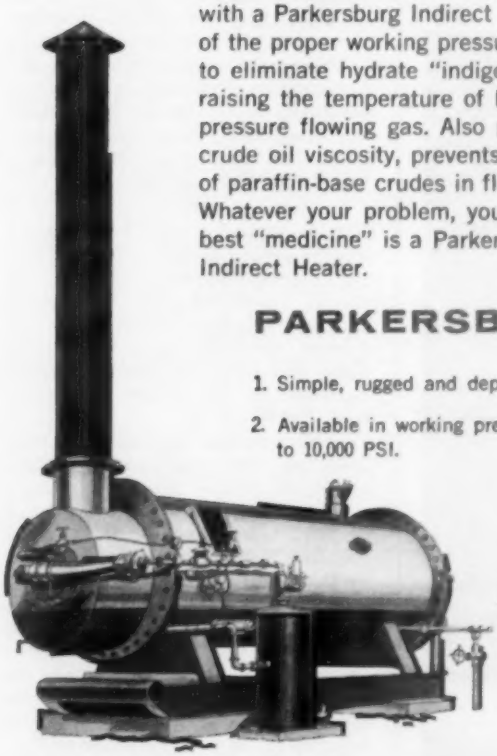
The Humble division of Humble Oil & Refining Co. apparently is using the cellar method in both Louisana and Texas to increase the percentage recovery of original oil in place.

Walter Jensen, independent Hous-

℞

"INDIGESTION AID" for high-pressure flowlines

Let your Parkersburg man be your "medicine man" in treating hydrate formation problems. He can provide you with a Parkersburg Indirect Heater of the proper working pressure and size to eliminate hydrate "indigestion" by raising the temperature of high-pressure flowing gas. Also reduces crude oil viscosity, prevents congealing of paraffin-base crudes in flowlines. Whatever your problem, your best "medicine" is a Parkersburg Indirect Heater.



PARKERSBURG Flowline Indirect Heaters

1. Simple, rugged and dependable controls.
2. Available in working pressures from 3,000 PSI to 10,000 PSI.
3. Blowout-proof burner and pilot.
4. Standard sizes to 4,000,000 BTU/HR. Larger sizes upon application.

SEE YOUR PARKERSBURG MAN TODAY!

THE PARKERSBURG RIG & REEL COMPANY
Division of Parkersburg-Aetna Corp.
PARKERSBURG • HOUSTON • COFFEYVILLE

PARKERSBURG—The FULL LINE in Pressure Vessels . . . Separators, Metering Equipment, Treaters, Heaters, Knockouts and Oil Skimmers, Scrubbers, Hyrecos, Dynamic Adsorption Units, Glycol Dehydrators, Stabilizers.

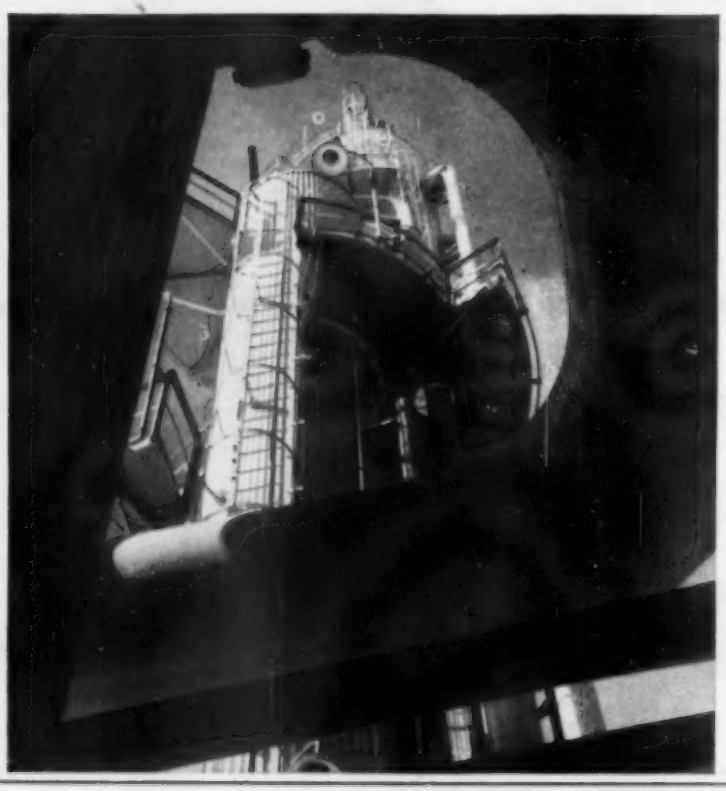
DOW

serves
PETROLEUM
across
the board

Every step of the way from well to finished product, Dow chemicals and chemists serve the petroleum industry. For example: chemicals from Dow help speed drilling operations . . . Dow solvents give an important "assist" to refining . . . and chemists from Dow's petroleum and gas conditioning lab trouble-shoot problems of every sort, from every part of the country. Here's a quick look at some typical cases.

LIGHT-FINGERED SOLVENTS "LIFT" PURE AROMATICS FROM FEED STOCKS

Smooth as a master magician, the Udex® process extracts super-pure aromatic concentrates from complex feed stocks —even at low levels of concentration — thanks to the highly selective Dow glycol solvents on which the process is based.



Units for Udex, using Dow glycols, extract super-pure aromatics from feed stocks.

The explosive growth of the plastics, synthetic fiber and chemical industries after World War II created tremendous demands for benzene, toluene and xylenes. Production then, by conventional methods, was insufficient to satisfy the need. The newly developed Udex process was the answer.

This process, originated by Dow and developed for licensing by Universal Oil Products, is a selective liquid/liquid solvent extraction method for the separation and purification of aromatics from hydrocarbon mixtures.

So selective are the solvents that several aromatics can be extracted simultaneously, at high purity levels. In fact, not only do products of the process exceed established ASTM nitration-grade specifications, but, in the case of xylenes, the resulting purity is often higher than that of the coal-tar standard on which the specifications were originally based!

The extraction solvents are Dow diethylene, diethylene-dipropylene, and triethylene glycols, depending on feed stock composition and the end product desired. Udex glycols are specially prepared, high purity solvents developed by Dow for use in the Udex process. In multi-stage counter-current extraction column, the hydrocarbon contacts the Udex glycol which selectively dissolves the aromatics, then moves on to the separator. Here the aromatics are separated from the glycol, which is returned to the extractor for reuse.

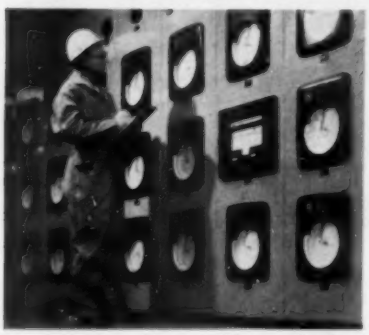
The separated aromatic phase is distilled in a "train" of columns, producing pure benzene, toluene and C_8 aromatics as the overhead products.

•DOWTHERM A
For a heated exchange

For the precise control of heat in refining operations, Dowtherm® A, heat transfer medium, is efficient, non-fouling (or thermally stable) and easily handled. In the temperature range from 400° to 750° F., this organic medium not only provides fraction-of-a-degree temperature control, but keeps pressures safely low in vapor-phase systems.

Dowtherm A medium reduces carbonization in direct fired heaters. This means less down time of equipment for cleaning . . . increased efficiency and savings on fuel.

Systems for Dowtherm A for liquid or vapor-phase heating can be tailored to meet the exact requirements of any



Dowtherm A medium provides precise heat control, and low pressures for operating safety.

refining operation. Write today for a copy of "Dowtherm For Industrial Process Heating."

•DOW CAUSTIC SODA
You can get it, fast!

Dow's widespread distribution system can put Dow caustic on your doorstep in a hurry! This "roustabout" chemical is used for solubilizing organic clay dispersants, for controlling calcium ion solubility, and for countless other solubilizing and neutralizing jobs. And Dow gives you a choice of: 50% or 73% solutions, or solid, flake, or ground flake forms.

For complete information on the use of caustic, write for a copy of the Dow Caustic Soda Handbook.

Production and gas conditioning, too

PELADOW ***Solution for packing problems***

High density brines of Peladow for annular fillup are economical and easy to handle.

High-density brines made from Peladow® calcium chloride are curing many a completion headache. When these heavy brines of Peladow replace weighted packer muds for annular fillup, the problem of solids precipitation and solidification is eliminated.

Completion costs go down, too, because Peladow calcium chloride pellets are the most concentrated form of active brine material. You save on freight costs at the outset. Add to this the easy handling of Peladow . . . the pellets dissolve quickly in one step . . . and you'll find cost savings to be substantial.

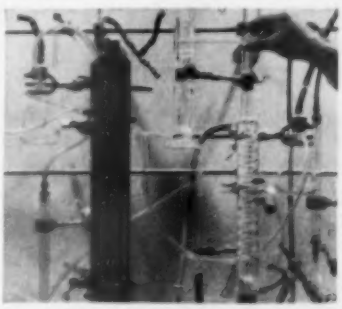
Peladow forms brines of much higher densities than sea water or sodium chloride, and is normally used at densities of up to 11.6 pounds per gallon. There's a wealth of detail in the brochure entitled "Peladow Calcium Chloride For Oil Well Completion Brines." Write for your copy.

GAS CONDITIONING LAB ***Old problem—new method***

One good example of Dow's clinical approach to solving customers' gas processing problems is the recent development of an improved method of analyzing natural gas for carbonyl sulfide (COS) and other troublesome components.

The equipment for this new gas chromatographic technique is designed for use in small laboratories. The method is fast, accurate and convenient, and requires only a moderate investment in equipment. Further, the equipment can be easily operated and maintained by a competent technician. Details of the equipment and method are available on request.

The development of this new method is typical of the assistance which Dow's Gas Conditioning Laboratory provides for gas processors, free of charge. Dow's technical staff and extensive laboratory facilities are available to any company, at any time.



When the problem requires on-the-spot trouble-shooting, Dow technical men work with the processor in his plant.

DOWELL, a division of The Dow Chemical Company, is the largest service company of its kind. Dowell specializes in providing chemicals and services for the oil industry . . . such as the acidizing of wells for greater flow; "mud acid" treating to open clay-clogged wells; shutting off oil well waters and consolidating sands; electrical charting of deep well zones; and scores of other services, many pioneered and developed by Dowell.

• IN EVERY SEGMENT of the petroleum industry, Dow men and materials are hard at work. For more information on how Dow can help you, and to receive copies of the booklets described above, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Chemicals Merchandising Dept. 501LR4-15.

See "The Dow Hour of Great Mysteries" on NBC-TV

THE DOW CHEMICAL COMPANY
Midland, Michigan

DOW

Costs go down with Armco Casing

HERE'S HOW:

There are three basic reasons why Armco Casing means lower costs, greater efficiency.

Fast field welding

The fast, easy-to-make downhand fillet weld required with Armco Casing keeps field welding costs low. Just stab one end of a 40- or 50-foot joint into the Armco Slip-Joint Collar, make a fast weld and lower away.

Low casing costs

High collapse resistance of Armco Casing is uniform throughout, which means you can safely set lighter, lower cost strings to greater depths. Tests have proved that the variation in collapse pressure for Armco Casing is less than for other types of casing.

Reduced running time

Armco Casing, supplied in exact 40- or 50-foot lengths, eliminates the usual random or double-random lengths. Because of fewer joints in the string, you get faster running, lower costs. And uniform lengths help you quickly determine the footage in the hole or in the stockpile at any time.

New steels are born at Armco

Armco Casing is distributed by National Tank Company from the 26 stocking points listed at right. Sizes range from 6 to 24 inches. Write us for complete information. Armco Drainage & Metal Products, Inc., 4440 Curtis Street, Middletown, Ohio.

Illinois
Clay City

Indiana
New Harmony

Kansas
El Dorado
Great Bend
Liberal

Louisiana
Harvey
Lake Charles
New Iberia
Shreveport

Montana
Roundup

Nebraska
Kimball
Sidney

New Mexico
Farmington
Hobbs

North Dakota
Newtown
Tioga
Williston
Flaxton

Oklahoma
Oklahoma City
Seminole

Texas
Houston
Odessa
Pampa
Perryton
Snyder

Wyoming
Casper

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

ton engineer, said that, so far as he could determine, Humble "is the only operator who is active and actually engaged in the injection of heavy fluids into a one-well reservoir."

The two fields involved in the projects are Block 18, Grand Isle area, off Louisiana, and Brookshire field, Waller County, Tex.

Humble is using salt water in both instances as injection fluid.

With primary methods, said Jensen, Humble recovered only from 2% to 8% of the oil in place in Block 18, while with the cellar technique an estimated 15% to 21% will be produced, or 1 bbl. of oil for each 1½ bbl. of water injected.

He said the qualifications for this type of secondary recovery are: (1) high rate of dip to the sands; (2) high permeability; (3) pressure-depletion type reservoirs; (4) small reservoirs, and (5) a large difference in the densities of the induced fluid and the produced fluid.

Tool Cuts Drilling Vibrations

A drilling tool designed to eliminate the damaging shock action encountered in rough drilling—and thus help maintain optimum drilling weights and speeds—is now in the testing stage.

The tool, which is called Drilco Shock Sub, has been developed by Drilco Oil Tools, Inc., Midland, Tex.

Essentially, it is a mechanical rubber spring mounted in a housing connected between the bit and the drill string (drawing).

It is aimed at:

(1) Minimizing damage to the surface equipment and drill string caused by severe vibrational loads; and

(2) Enabling the operator to maintain optimum drilling speeds and weights rather than compromising them to lessen the bouncing effect, which is the ordinary practice.

Evaluation of bit life and penetration rate when using the rubber-mounted shock sub is incomplete at this time, says Drilco.

But results so far are said to be encouraging.

Tests have indicated that in rough drilling conditions, use of the sub has helped increase bit life and penetration rate by eliminating the vertical vibrations.

Drilling contractor opinion seems to be that the tool will prove useful, especially drilling holes of intermediate depth.

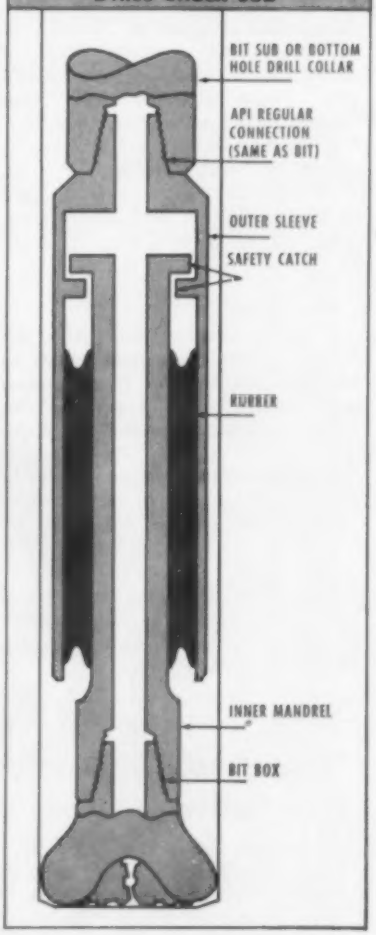
Most of the testing work on the sub right now is directed at making it last longer.

As far as the operation of the tool is concerned, says Drilco, "We are well pleased. But we are having some difficulty in making it last as long as we would like.

"We are trying to improve the load distribution on the rubber portion in order to give it a longer life."

On the average, the tool will last through drilling of three intermediate holes, ranging from 3,000 ft. to 5,000 ft. deep.

Schematic Drawing of Drilco Shock Sub



There are exceptions, however. One tool has been running continuously for almost two months.

There are seven of the tools in existence. Five of them—one in Utah, one in Wyoming, and three in West Texas—are being used. The remaining two are in the company's shop in Midland.

Export Decision Hikes Spending

Some $6.8-billion is expected to be spent in Canada for oil and gas development during the next ten years.

The estimate follows the recent National Energy Board sanction of gas exports to the U.S., says the Canadian Petroleum Assn., which made the prediction.

The export decision comes as a blessing to gas producers, who currently have an investment of more than $250-million in about 1,000 completed but shut-in gas wells.

Prior to the NEB announcement, it was estimated that Canadian operators would spend about $550-million this year for exploration, development, and production.

This is just $27-million short of the record $577-million expenditure for 1957.

It's estimated that about $1.3-billion of the total $6.8-billion expected expenditure is a direct result of the gas export decision.

One quick result is an expected $50-million development drilling program that will stem from expansion plans of Westcoast Transmission Co., Ltd.

The company will build an additional 300 mi. of 30-in. gas line into the Ft. Nelson, British Columbia area, plus an extension gathering system in that area, northern Alberta, and into the Northwest Territories.

The foothills area of Alberta also is expected to be the scene of increased drilling as a result of the export decision (PW—Mar.11'60,p21).

Though most of the gas approved for export will come from Alberta, the government plans to give future export priority to northern British Columbia, the Northwest Territories, and northern Alberta.

This announced intention, coupled with the recent big successes in these areas (PW—Apr.8'60,p39), virtually assures a continued fast growth in exploration and development drilling in these areas.

The export decision comes at a time when the industry appears to be making a comeback from its lows of 1958 and early 1959.

Footage already drilled shows promise of a 13.7% increase this year over 1959. And the number of holes drilled is expected to be up 8%, for a total of 2,700.

In addition, crude demand has been running stronger than last year, when it scored an 11% increase.

What's New / IN EXPLORATION, DRILLING, PRODUCTION

El Paso Natural Gas Co. will build a gas-treating plant using a new process to produce 100-million cu. ft. of residue gas in Brown-Bassett field, Terrell County, West Texas.

The process, recently developed by Fluor Corp. Ltd., purifies natural gas laden with excess quantities of carbon dioxide. Natural gas from the field contains up to 53% carbon dioxide.

Fluor Corp. will handle engineering and construction of the $3-million plant, scheduled for completion in December. The Fluor process uses an organic solvent to absorb the carbon dioxide.

•

Operation of the first and only fireflood project in East Texas has been taken over by Tejas Petroleum Engineers, Dallas.

The experimental operation is centered in the tricky Carrizo sand in the old Camp Hill shallow field, Anderson County.

Tejas, a partnership composed of Jon T. Moss and Phillip White, has been technical advisor for the operation before and since ignition last April. The project was backed by R. E. Wood, Chicago, who retired from active participation but retains 1,500 lease acres around the fired pattern.

Moss says the operation to date has been successful in that it clearly establishes that the 500-ft. depth is suited to combustion techniques.

The fireflood project is one in a long series of efforts to get the Carrizo to yield oil. Normal production efforts have yielded only a little oil per well, with sanding a major difficulty.

•

Alberta's Oil & Gas Conservation Board appears likely to begin dealing with applications for commercial development of oil from tar sands.

One such application, by Great Canadian Oil Sands Ltd., has already been submitted to the board. It's believed the company would employ the hot water process for extraction. No date has been set for a hearing.

In a related move, Alberta's Premier and Mines Minister E. C. Manning introduced a bill in the legislature that would empower the board to decide in specific cases what amount of oil may be removed from the sands without upsetting the market for other Alberta oil. Manning also has announced that a committee will be set up to study impact of commercial development of the oil sands with respect to its effects on other oil production in the province.

•

Texaco Inc. hopes to complete construction of a double-deck platform in time to start drilling in July on a California offshore lease.

The platform is designed to accommodate as many as 28 wells. It will be erected in about 95 ft. of water, 1½ mi. offshore on the 3,840-acre Texaco-Monterey lease near Gaviota, 30 mi. west of Santa Barbara.

The platform will be a jacket type, erected on steel piling driven 70 ft. to 80 ft. into the ocean floor. Each deck will be about 50 ft. above water level, and will measure about 130x138 ft.

•

Ohio Oil Co. has paid about $7-million in cash and oil payments to McClure Oil Co. for its producing and exploratory interests in the Scipio-Albion-Pulaski area of Michigan.

The interests involve some 500,000 acres in the expanding area (PW—Mar.11'60,p18).

•

Tekoil Oil Corp. plans to start secondary recovery and recompletion programs on three newly acquired properties in Oklahoma.

The company acquired 38 wells on 10 leases in West Sasakwa field, Seminole County, bought for cash and an oil payment from Marvin Boyd, Dallas. The other two deals are for cash and involve leases in Northeast Uncas field, Kay County. These include 6 wells on 240 acres on the G. C. Cales lease, and 3 wells on 80 acres in the Burch Lane lease.

•

More than 25,000 acres of tribal and alloted lands of the Blackfeet Indian Reservation, Montana, were leased for a total of $1,141,481.

The Mar. 30 sale of leases was by sealed bid. The offering consisted of 200 tracts, 95 of which received bids. All are in Glacier County.

High bidders were Pan American Petroleum Corp. and Gulf Oil Corp., who paid a joint bonus of $207.53 per acre for four tracts totaling 11,067 acres.

•

The Texas Railroad Commission's proration order for Emperor Gas field, Winkler County, has been upheld by the state Court of Civil Appeals.

The court, by a two-to-one majority, affirmed the order, which Pan American Petroleum Corp. and Humble Oil & Refining Co. sought to revise. W. A. Moncrief, Jr., holder of a permit to drill a test on a five-acre tract in the field, sided with the commission (PW—Aug.7'59,p32).

In a related statement, Olin Culberson, Texas Railroad Commissioner, said the state formula for prorating gas-well production will stand, despite various attacks. He added that any changes in the formula—pegged to one-third well and two-thirds acreage—would have to result only from constitutional amendments.

•

The federal district court ruling dismissing a government action to cancel 86 oil and gas leases in Wyoming has been appealed to the U.S. Circuit Court of Appeals.

U.S. Judge Ewing T. Kerr dismissed the suit Mar. 4 on the ground that the Interior secretary should have been named a party to the action. Kerr added that the Bureau of Land

Cable Tool Rig Goes To National Museum

A cable tool drilling rig that was manufactured in 1890 and used in Wyoming until about 1917 is bound for the Smithsonian Institute in Washington, D.C.

The rig was donated by Walter G. Davis, Casper (Wyo.) independent, for display in the institute's new petroleum building. The rig stood for more than 40 years in Iron Creek field, west of Casper.

YOU NAME THE MUD SPERSENE THINS IT.....

	Weight—lb./gal.	Viscosity—sec./qt.	Gel Strength—Initial/10 min. lb./100 sq. ft.	Fluid Loss—cc.
Gyp mud	19.0	63	0-3	3.9
Lime mud	12.7	53	0-0	5.0
Saturated salt mud	15.0	64	0-4	2.8
Sea water mud	10.8	40	1-4	7.4

The chart tells the story. Based on mud reports of actual drilling wells, it gives conclusive evidence that Spersene® controls viscosity and gel strengths in different types of drilling fluids. The facts prove that Spersene is highly effective in gyp, lime, and salty muds.

Spersene permits the use of high weight gyp muds for deep drilling. The low alkalinity of gyp-Spersene muds improves stability at high temperatures. And, Spersene is soluble in fresh and **salt** water.

Spersene is one more tool developed by Magcobar Technology. The Magcobar mud engineer knows Spersene, knows how to use it **right** for highest performance. He can help you plan your drilling program with Spersene for maximum economy.

So, wherever you drill, begin planning with Magcobar. You'll find that Magcobar Technology combines the finest engineering skills with high performance products to avoid costly trouble in drilling to let you drill at the lowest cost per foot every foot of the way.

Magcobar
Complete
DRILLING MUD SERVICE

DRESSER INDUSTRIES, INC.
OIL • GAS • CHEMICAL
ELECTRONIC • INDUSTRIAL

MAGNET COVE BARIUM CORP.
HOUSTON

Well Done
With Magcobar
Technology

for better use of
CHEMICAL TECHNOLOGY in PETROLEUM PROCESSING

Use this
modern guide
to essential
—facts
—methods
—data

Here is practical reference to the vital chemical aspects of petroleum processing, including modern methods, standards, and data for distillation and refining. Clear discussions of chemical constituents of petroleum, physical properties and common characteristics of various types, origin, production processes, uses, and products. A broad, realistic understanding of how the petroleum industry is served by chemistry is yours in this book.

Just Out! Third Edition.
CHEMICAL TECHNOLOGY OF PETROLEUM
By **WILLIAM A. GRUSE**
Retired, Mellon Institute
and **DONALD R. STEVENS**
Assistant Administrative Fellow
Mellon Institute

652 pages, 6 x 9, 62 illustrations, $15.00

This revised edition describes advances in catalytic cracking, chemical conversion by catalytic methods, chemical synthesis, and other areas. It presents modern chemical aspects of petroleum production, refining, and utilization—reflecting progress in the application of catalytic methods, the development of synthesis, and other technical advances.

The whole scope of the field is covered by two authors and six contributing specialists—from the production, classification, behavior, and physical properties of crude oil to clear, understandable discussions of refining by chemical and physical methods, thermal and catalytic cracking, and other essentials.

Some topics covered:
—reservoir engineering
—gasoline fraction
—gum formation
—hydrogenation
—polymerization
—effects of radiation
—viscosity
—thermal properties
—diesel fuels
—synthetic lubricants
—wax crystallization
—petroleum asphalts

CONTENTS
1. Production, Classification, and Description of Crude Oils
2. Composition of Petroleum and Petroleum Products
3. Chemical Reactions and Group Reactions
4. Physical Properties
5. Origin of Petroleum
6. Distillation
7. Refining by Chemical Methods
8. Refining by Physical Methods
9. Cracking of Petroleum Oils
10. Chemical Thermodynamics of Petroleum Hydrocarbons
11. Gasoline and Other Motor Fuels
12. Kerosene, Absorbent Oils, and Fuel Oils
13. Lubrication and Lubricants
14. Petroleum Waxes
15. Petroleum Asphalts
16. Miscellaneous Petroleum Products, and Derived Products

SEE IT 10 DAYS
MAIL COUPON

McGraw-Hill Book Co., Inc. Dept. PW-4-15
327 West 41st Street, NYC (36)
Send me Gruse and Stevens' **Chemical Technology of Petroleum** for 10 days' examination on approval. In 10 days I will remit $15.00 plus few cents delivery, or return book postpaid. (We pay delivery if you remit with this coupon—same return privilege.)
(Print)
Name .....
Address .....
City ..... Zone ..... State .....
Company .....
Position .....
For price and terms outside U. S. Write McGraw-Hill Int'l., N. Y. C. PW-4-15

Management also has violated the law by initiating administrative proceedings to cancel the leases, rather than going through the courts.

•

A $2-million gas-conservation plant will be constructed in Harmatton Elkton field, Alberta.

Canadian Superior Oil of California, Ltd. has been designated operator by the 21 owner companies. The gas will be compressed to about 4,400 psi. and reinjected into the gas cap of the reservoir. The plant, which will have a capacity of 15-million cf/d, will be built by Fluor Corp. of Canada, Ltd.

•

The Texas Railroad Commission has approved Humble Oil & Refining Co.'s plan to try a new water-enriched gas injection program in Seeligson Zone 21-A field, Kleberg County, Tex.

Unit or reservoir allowables for the zone were approved, along with authority to transfer allowables and expand the project without special hearing (PW—Apr.1'60,p17).

•

Stockholders of Texas National Petroleum Co. and Petro-Minerals Co. have agreed to merger plans.

Texas National will issue one share of stock for every four shares of Petro-Minerals stock. Petro-Minerals is primarily a royalty company, with some 29,000 acres of producing royalties in New Mexico's San Juan Basin. The merger was described as a "$1.6-million deal."

•

Engineering

A new perforating charge that uses concentrated acid as the projectile has been developed by Western Oil Co., Ft. Worth.

The "Stinger" perforating charge employs Western's velocity perforating principle to perforate, and at the same time place acid in each perforation at the time of perforating.

The company says the use of acid in granular form as the projectile provides cleaner perforations and aids the effective permeability in the formation at the time of impact. The Stinger is run on a retrievable steel strip carrier, which gives it greater versatility. The gun may be run in lengths up to 100 ft., with blanks left in the gun for selective perforating.

Drilling Highlights

New Mexico—Sun Oil Co. No. 1 M. J. McNulty, section 3-9w-34e, Lea County, recovered 8,500 ft. of 40-gravity oil and some gas on 90-minute drillstem test at 9,610-33 ft. in the Pennsylvanian. The wildcat is 7 mi. west of Bough field.

In Eddy County, Chambers & Kennedy No. 1 Delhi-Taylor Oil Corp.-State, section 34-17s-28e, was completed for 456 b/d of 42-gravity oil through 21/64-in. choke and open hole at 6,289-99 ft. in the Abo (Permian) reef in the shallow Artesia field. The well is more than 1 mi. northeast of other Abo production.

Oklahoma—Shell Oil Co. No. 1 Cash, section 23-1n-8w, Stephens County, flowed oil at rate of 40 bbl. per hour on drillstem test at 6,800 ft., and flowed gas at rate of 2-million cf/d through ½-in. choke and perforations at 7,256-76 ft. in the Des Moines (Pennsylvanian). The wildcat is 3 mi. northeast of shallow oil production.

In Major County, Pan American Petroleum Corp. No. 1 Houk, section 8-21n-15w, flowed gas at a rate of 10-million cf/d through a series of perforations between 7,485-546 ft. in the Chester. Then, 150 bbl. of 48-gravity oil flowed in 8 hours through ⅜-in. choke with gas flow declining to a rate of 2.7-million cf/d. The prospect is 2 mi. south of gas production.

West Texas—Norwood Oil Co. and Amarillo Oil Co. No. 1 Anna Herring, section 94, block 34, H&TC survey, Ward County, 6 mi. south of Pyote townsite, was completed for 193 b/d of 39-gravity oil through 22/64-in. choke and perforations at 6,109-17 ft. and 6,129-34 ft. in the Cherry Canyon section of the Delaware. The discovery is 4 mi. east of Pitzer gas-condensate field.

East Texas—R. B. Sanders and J. W. Murchison No. 1 D. E. Morrison, Joseph Rice survey, Henderson County, was completed for 9-million cf/d of gas and 3.5 bbl. of 63-gravity condensate per million through perforations at 8,511-34 ft., 8,536-60 ft., and 8,716-22 ft. in the Travis Peak. The well is 1¾ mi. southwest of Tri-Cities Travis Peak field.

California—Buttes Gas & Oil Co. No. 1-E Corning Community, section 1-24n-3w, Tehama County, flowed 8-million cf/d of gas through 1-in. choke and perforations at 1,086-101 ft. as a shallow pay discovery in Corning gas field.

When this went on location . . .

these went into stock

It may be a little bit difficult to see the connection between a triplex pump being installed on a waterflood project, and a shipment of rubber pails arriving at a nearby National Supply Store—but one is cause, the other effect!

A very important part of the store manager's business is to know what is happening in the territory . . . *and what the happenings mean in terms of new parts or product needs.* When this store manager got word of waterflooding plans, he knew that some of the operators would have to handle alkalis and acids that would mean sudden death to metal containers. So—he ordered rubber pails to do the job.

Currently, we look to thousands of suppliers to provide us with products and the list has to be frequently expanded, as in this instance. The products vary widely—but they all have one thing in common. Each one is made by an established manufacturer, with a proven reputation for quality and reliability. Link-Belt—Westinghouse—Diston—Scott—Marsh—Fyr-Fyter—FMC—Minnesota Mining and Manufacturing—names like these . . . names you know and trust . . . are on every product sold by National. The integrity of the maker added to the integrity of the seller, provides a double guarantee on every item you obtain from National Supply.

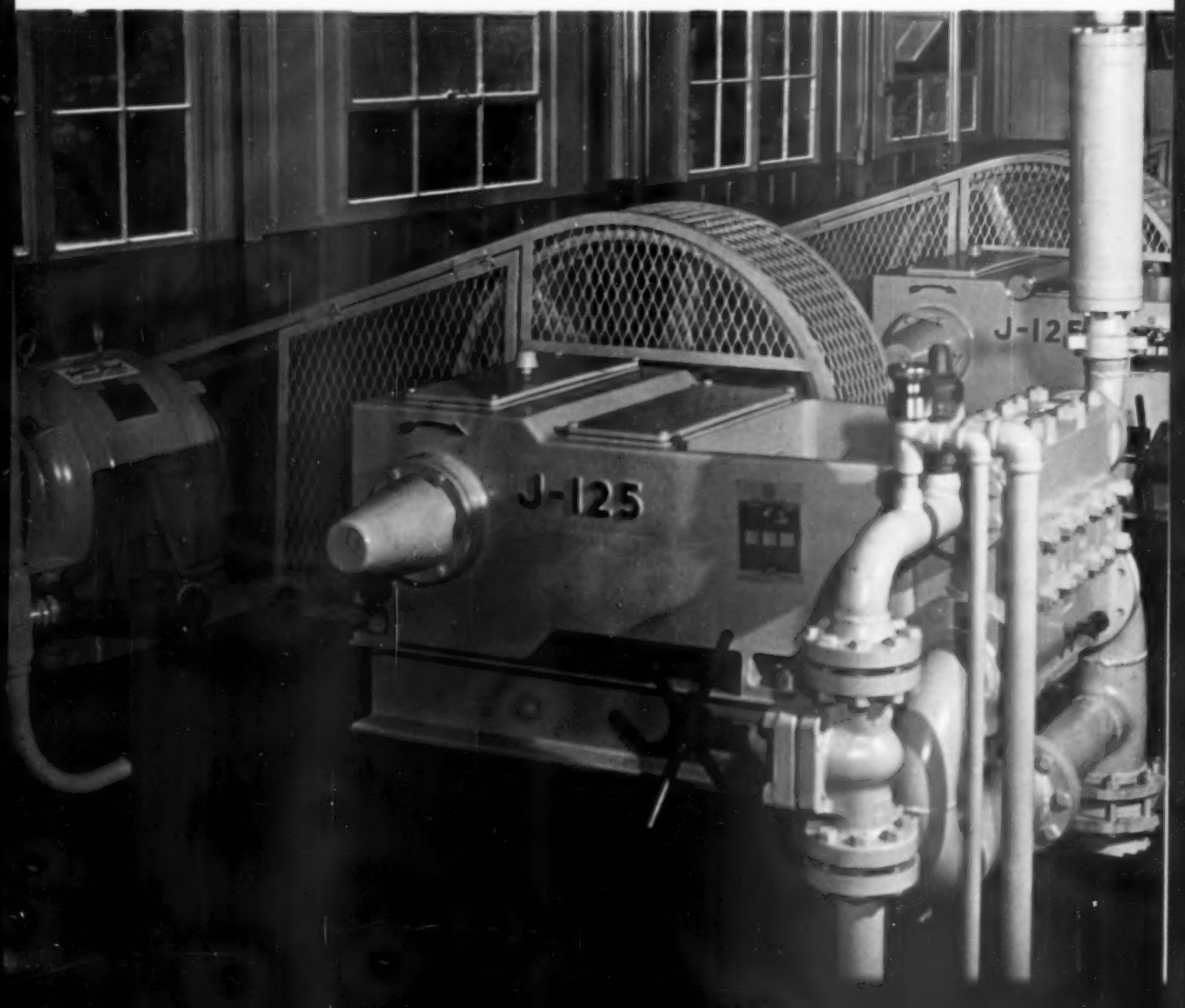
Why National's J-125 Triplex is a smooth running, versatile pump

When any production or drilling unit is made by National, you expect it to have no compromises in design or materials. This is true of the J-125. But check further—see the specific reasons why this pump will perform better than any other in its class. In the J-125, you get—

A BUILT-IN SUCTION DAMPENER—Runs the full length of the cylinder, directly beneath suction valves, to provide optimum dampening effect. The dampener keeps harmful surges from entering suction piping, promotes better filling . . . makes your overall pumping operation smoother and quieter.

FLUID END FLEXIBILITY—Three fluid ends are available for pressures to 6,000 psi (1) low pressure-high volume service (2) medium pressure-medium volume service (3) high pressure-low volume service. Each is available for corrosive or noncorrosive conditions. Ceramic, Colmonoy-coated steel and piston ring plungers (for power oil service) are available in a wide range of sizes.

Four compact J-125 Triplex Pumps are the core of the Mink Island Water Flood plant near New Harmony, Indiana.



Every triplex pump manufactured by National gets a break-in test run up to full rated speed and pressure before it leaves the plant. Fluid cylinders are hydrostatically tested to at least twice rated pressure before assembly of the complete pump.

A DOUBLE EXTENSION CRANKSHAFT – Permits use of a direct connection or a V-belt drive without reversing the crankshaft . . . also enables you to connect auxiliary drives such as chemical or sump pump in addition to the regular drive.

EASY ACCESS TO PLUNGERS, STUFFING BOXES—Ample space in the cradle chamber makes this possible. You can remove plungers or replace packing without removing stuffing boxes. If you choose to remove stuffing boxes, you never disturb the fluid cylinder.

A REPLACEABLE INTERMEDIATE ROD—You replace it without disturbing crosshead or plunger stuffing box. The rod stuffing box seals are grease packed for positive sealing and long service life.

CONTROLLED VALVE FIT—Shouldered, tapered valves give a positive fit. You can remove suction valves without bothering stuffing boxes.

POSITIVE SPLASH LUBRICATION—Used on all pumps operating from 160 to 400 rpm.

LONG PACKING, PLUNGER LIFE—Stuffing boxes fit in a pilot bore in the rib-reinforced main frame, assure proper alignment with plungers. Packing is kept in good condition by lubrication through a grease fitting on the stuffing box.

Don't settle for less than the best in a plunger pump. See the National Supply representative in your area about the J-125.

National High Drive Pumper on the next page . . .

The considerably smaller base required for the High Drive unit makes it ideal for remote locations where foundation costs are high.

NATIONAL HIGH DRIVE Pumper insures easier, low cost installations!

Here's the ultimate in low-cost pumping unit installations—the National *High Drive*. The concrete base for this compact, easy-to-handle pumping unit is much smaller than that needed for other units, so you save on foundation costs. Installation costs are also reduced by the platform-mounted electric motor which permits the use of shorter belts. And because they're elevated, the motor and belts are protected from the damages of blowing sand and high water.

Other outstanding features of the National *High Drive* are:

- Less expensive drive accessories and V-belt replacement
- More compact and easier to handle than pumpers of equal capacity
- Brake lever elevated for convenience
- Elevated platform rigidly constructed

The National representative in your area can furnish more details on these features, as well as all sizes of the National *High Drive* available. Ask him soon.

THE NATIONAL SUPPLY COMPANY

Two Gateway Center, Pittsburgh 22, Pennsylvania

Subsidiary of Armco Steel Corporation

DIVISION OFFICES: Calgary, Columbus, Dallas, Denver, Houston, Torrance, Tulsa
EXPORT: 600 Fifth Avenue, New York 20, N. Y., U. S. A.; City Wall House, Chiswell Street, London E. C. 1

Printed in U.S.A.

Canada Gears for New Line Building

Approval of the export of about 1-billion cf/d of Canadian gas to the U.S. is expected to touch off a far-reaching boom in pipeline construction and related fields in Canada.

This was the consensus of oil industry leaders and officials last week after the National Energy Board approved five long-pending export permits, together with three new pipeline projects (PW—Apr.8'60,p23).

"Approval of these export projects by the Canadian government will initiate activity in many areas of Canada," says James W. Kerr, president of Trans-Canada Pipe Lines, Ltd.

S. D. Turner, general manager of Big-Inch Pipe Co., describes the authorization of the exports as a move of "great significance."

"Through approval of the export permits," he says, "the government has provided timely encouragement for the oil and gas industry through which the whole of Canada will benefit."

Over $195-million will be spent for new pipeline facilities to handle the exports (map).

Biggest expenditure will be $121,705,240 by Alberta Gas Trunk Line Co. for a main line along the Foothills, in addition to laterals and gathering lines.

Trans-Canada Pipe Lines, Ltd., plans to spend $37,171,000 for a line from near Winnipeg to the U.S. border, plus new compressor stations on its main line to boost service to the eastern provinces.

Alberta Natural Gas Co. estimates the cost of its line from Coleman, Alta., to Kingsgate, B.C., on the border, will be $36,371,000.

And Canadian-Montana Pipe Line Co. expects to spend $204,852 for its line connecting the systems of Alberta Trunk Line and Montana Power Co.

Most of the material and equipment for the new projects will be made in Canada.

All of the pipeline companies have told the Canadian government that they intend to buy as much of their pipe and other equipment as possible from domestic manufacturers.

Two Canadian manufacturers of big-diameter pipe are rushing new mills to completion.

Page-Hersey Tubes, Ltd., announces that it will be ready to start rolling pipe this month, in diameters up to 40 in., at its new plant at Camrose, Alta.

The company's existing plant at Welland, Ont., which has been shut down for several months for lack of orders, has been put on production again to make 36-in. pipe.

Big-Inch Pipe Co. is racing to finish its new mill at Calgary by June. Initial production of the plant will be 120,000 tons a year of large-diameter pipe, with peak capacity designed for 180,000 tons a year (PW—Feb.19 '60,p76).

Trans-Canada Pipe Lines says that it will shortly place "firm orders" for $10-million worth of compressor equipment alone.

The company reports that much of this equipment, as well as the pipe that it will need, will be obtained in Canada.

Trans-Canada will build eight new compressor stations. Six of them will use natural gas turbine-powered compressors, which will mark the first time that such compressors have been installed in Canada. They will be used on Trans-Canada's line in Saskatchewan and Manitoba. The other two compressors will be of the engine-driven type. They will be installed at Ramore and Kenora, Ont.

The new construction and manufacturing activity is expected to open up at least 24,000 jobs over the next year or two, according to estimates by Canadian oil industry spokesmen.

By far the greater portion of these jobs will be filled from the domestic labor force.

Trans-Canada figures it will need at least 2,000 workers for its project, which it hopes to complete by Nov. 1, when its exports are slated to begin. Practically all of the labor will be recruited in Canada, Trans-Canada told the National Energy Board.

All the other companies have given NEB the same assurances.

Alberta Natural told the board that "maximum use of Canadian labor would be made" in the construction of its line.

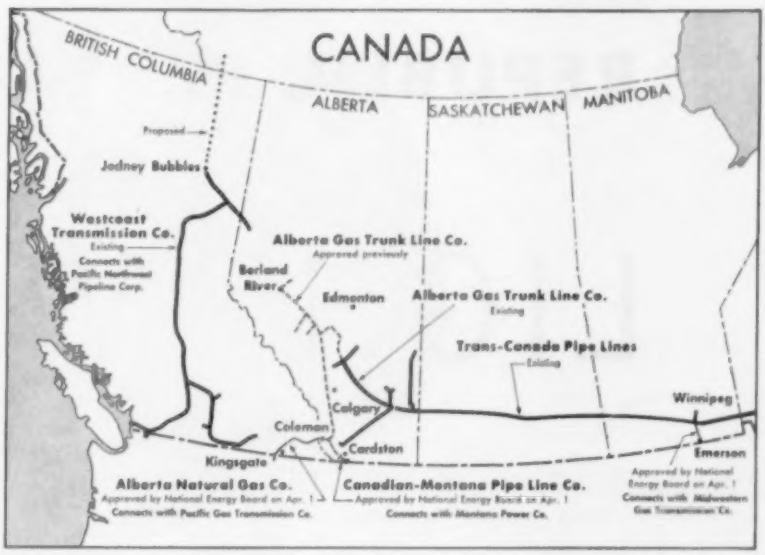
While there are two very good reasons for employing Canadians in the new jobs—the availability of a large trained force and NEB preference for domestic labor—the creation of the new opportunities is being hailed as a windfall gain to the nation's economy.

Frank M. McMahon, president of Westcoast Transmission Co., one of the biggest exporters, anticipates the possibility that the new job activity will spur the expansion of existing communities and the development of new ones, as was the case when his company first built its gas pipeline through British Columbia.

An estimated 21 new extraction plants are expected to spring up along the Alberta Foothills to process the gas.

A total of 15 extraction plants are in operation in the province now, and three new ones already are under way.

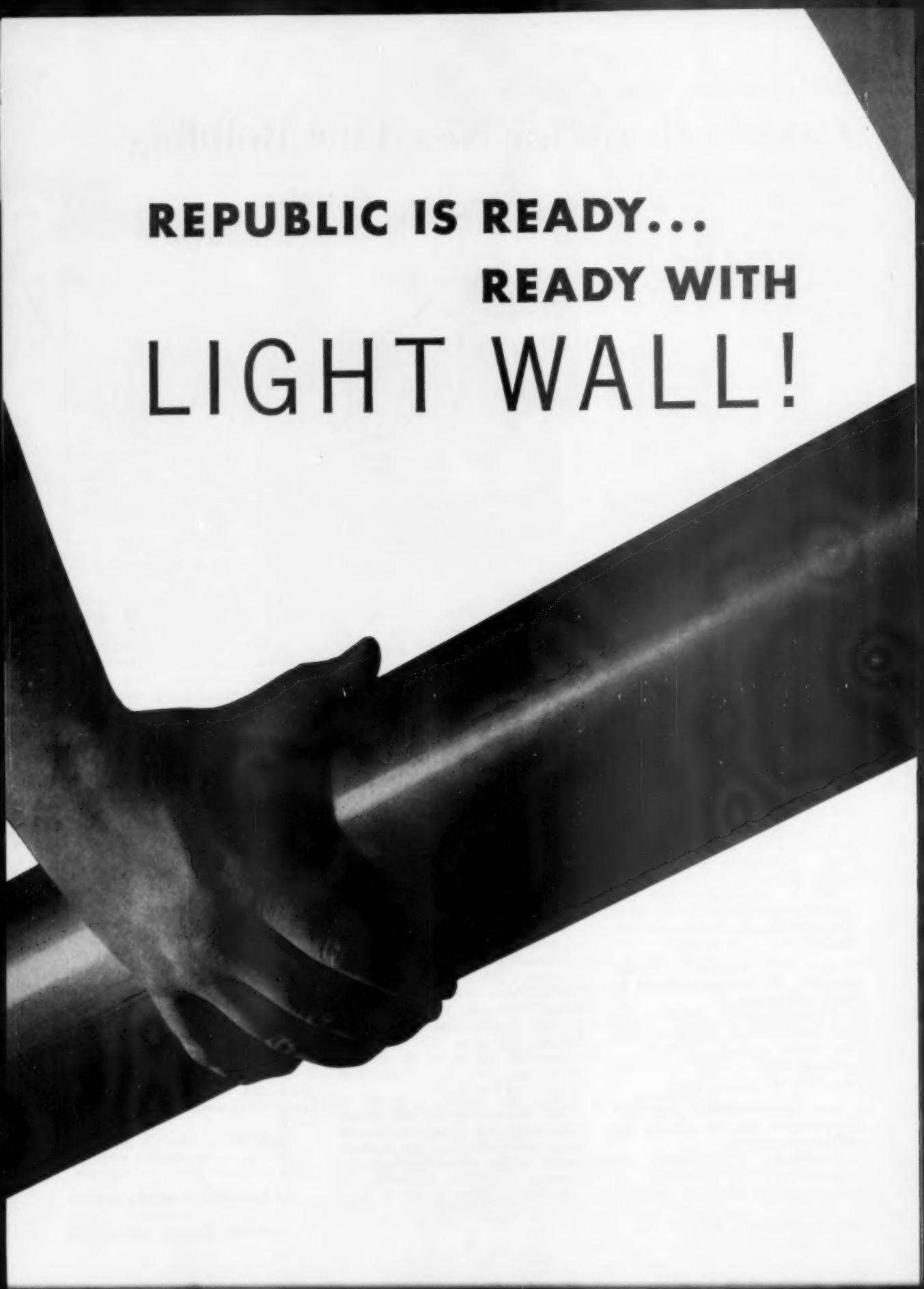
The Canadian oil industry predicts



REPUBLIC IS READY...

READY WITH

LIGHT WALL!



This newest kind of electric weld line pipe is available from Republic in 1.315" THROUGH 4.500" O.D.!

Republic has it—electric weld line pipe that saves you up to ⅓ the weight, ⅓ the cost. Of special interest for low pressure gathering and distribution applications, Republic Light Wall is manufactured to applicable parts of API Specification 5L, in sizes from 1.315" through 4.500" O.D.

Light wall pipe is joined by welding or by light wall pipe fittings. Or, pipe may be grooved for Victaulic Couplings. Republic X-TRU-COAT can be supplied in all sizes of light wall pipe.

YOUR REPUBLIC SALESMAN has complete details. Get in touch with him today or write Republic Steel Corporation, Dept. PW-9291, 1441 Republic Building, Cleveland 1, Ohio.

REPUBLIC LIGHT WALL LINE PIPE (BLACK) PLAIN END

Size O.D.	Weight Per Ft.	Wall Thickness	Test Pressures PSI Grade A	Grade B
1.315	.868	.065	1800	2000
	1.092	.083	2300	2500
	1.403	.109	2500	2500
1.660	1.107	.065	1400	1600
	1.398	.083	1800	2100
	1.805	.109	2400	2500
1.900	1.274	.065	1200	1400
	1.611	.083	1600	1800
	2.085	.109	2100	2400
2.375	1.60	.065	1000	1100
	2.03	.083	1300	1500
	2.64	.109	1700	1900
2.875	2.47	.083	1000	1200
	3.67	.125	1600	1800
3.500	3.03	.083	900	1000
	3.46	.095	1000	1100
	4.51*	.125*	1300	1500
	5.58*	.156*	1600	1900
	6.63*	.188*	1900	2200
4.000	3.47	.083	700	900
	3.96	.095	800	1000
	5.17*	.125*	1100	1300
	6.40*	.156*	1400	1600
	7.65*	.188*	1700	2000
4.500	3.92	.083	700	800
	4.47	.095	800	900
	5.84*	.125*	1000	1200
	7.25*	.156*	1200	1500
	8.64*	.188*	1500	1800

*Sizes made to API Standard 5L, latest edition.

All other items are manufactured to applicable parts of API. Standards 5L, latest edition.

REPUBLIC STEEL

Electric Weld • Fusion Weld • Continuous Butt Weld • Light Wall • X-TRU-COAT • Plastic Pipe

that the current exports will continue to stimulate the economy by generating new pipeline construction and other activity for years to come.

Says G. T. Pearson, president of Hudson's Bay Oil & Gas Co.:

"The approval is the best news received by the oil and gas industry in recent years. Canada's trade balance with the U.S. will be substantially reduced when the export systems are in full operation. Gas export of this magnitude will provide the incentive to assure continued high-level exploration and development activities throughout the industry. This will launch an extensive construction program providing many employment opportunities. New processing plants, sulfur plants, and other facilities will be required and completed, many of them within the next two years."

Westcoast Transmission is already planning to extend its gas pipeline northward about 300 mi. to the Northwest Territories (map).

The line would be 30 in. in diameter. Capacity has not been disclosed.

Cost of the line, plus a gathering system, proposed purification and chemical plants, and development of fields, would cost about $250-million.

Westcoast announced its plans last week after NEB said that future exports to the U.S. would be supplied by fields in northern British Columbia and Alberta, and in the Northwest Territories.

Plans for a pipeline from west-central Alberta to the Chicago area to export surplus LP-Gas also moved closer to reality with authorization of the gas exports.

The line would be about 1,900 mi. long and cost an estimated $150-million (PW—Mar.18'60,p63).

Foothills Pipelines, Ltd., a subsidiary of Pembina Pipe Lines, Ltd., has asked NEB approval to export liquids that will be produced along with the gas.

"The entire Canadian demand for liquid hydrocarbons is such that, even assuming an economic way of distributing products throughout Canada, there would be a substantial surplus which must be utilized," says James Scott, Pembina president.

And the general feeling in the industry is that the proposed LPG line will be authorized. On the eve of the gas exports authorization, the Alberta legislature passed a resolution favoring "orderly export marketing" of by-products.

Two subsidiaries of Standard Oil Co. (Ind.) have participated in studies by Pembina toward the building of the line.

Service Pipe Line Co. has taken part in the engineering phase of the studies. And Tuloma Gas Products Co. has been conducting preliminary negotiations with Canadian producers with a view toward buying liquids for export through the proposed line.

In addition, a Pembina official says, Indiana Standard itself might become a partner in a newly formed U.S. company, Dakota-Eastern Pipeline, Inc., which would build the U.S. portion of the line. He adds that Indiana Standard is also considering partnership in Foothills and in Westalta Pipe Lines, Ltd., the Pembina subsidiaries slated to build the Canadian section.

What's New / IN TRANSPORTATION

Humble Oil & Refining Co. says it has developed a zinc-silicate coating for tanker-cargo compartments that could cut corrosion costs by between $150,000 and $250,000 per ship per year.

Humble says that the new product, called Rust-Ban 190, "gives virtually 100% protection and lasts indefinitely because it is inorganic." It is one of about 300 coatings that have been under extensive tests by Esso Research & Engineering Co.

Humble says that use of the new coating would permit the thickness of compartment walls to be greatly reduced. Now, compartment walls usually are built about 20% thicker than American Bureau of Shipping standards to allow for loss through corrosion.

•

Panhandle Eastern Pipe Line Co. has sought an increase in its natural gas rates of $7,116,856 a year.

The company told the Federal Power Commission that the boost is made necessary by higher prices asked by Trunkline Gas Co., its subsidiary, and Phillips Petroleum Co.

Earlier, FPC had suspended for hearing a $5,365,000 hike sought by Trunkline.

•

A 20-mi. pipeline and marine terminal will be built to move crude from Alaska's Kenai Peninsula by Standard Oil Co. of California, Western Operations, Inc.

Cost is estimated at more than $4-million. Completion is slated for mid-1961.

The line will run from Soldotna Creek and Swanson River Unit fields to Nikiski, on Cook Inlet, proposed site of the terminal.

•

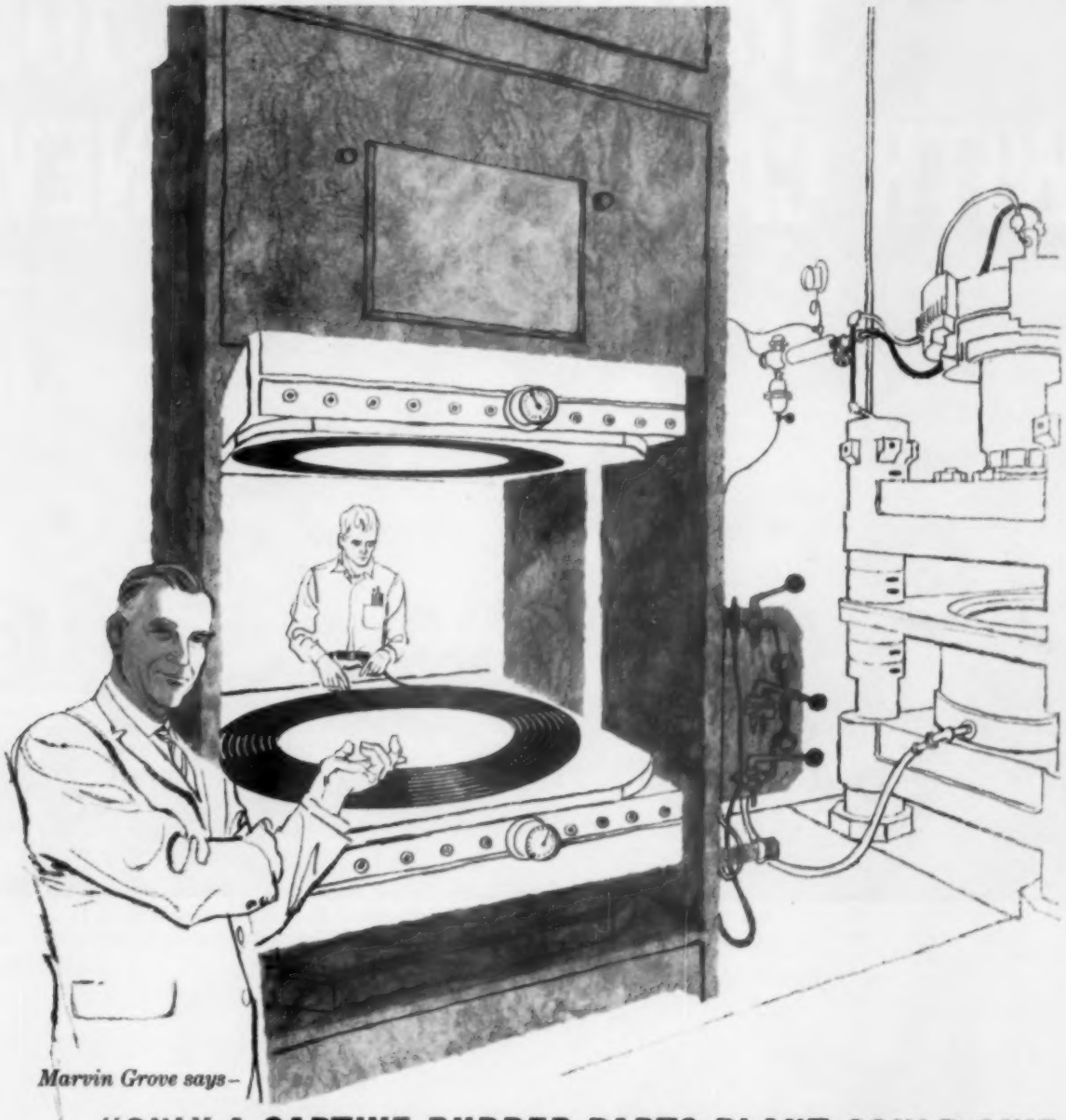
Delivery of pipe has started for the first section of the new LP-Gas pipeline of the Katy R.R. between Pampa, Tex., and Pratt, Kan. (PW—Apr.8 '60,p84).

U.S. Steel Corp.'s National Tube Division has delivered 8⅝-in. pipe, and is readying a shipment of 10¾-in. pipe.

Several other major U.S. pipe makers also have been given orders, however, according to Katy.

Installation of the line is scheduled to begin on Apr. 25. The entire 1,750-mi. line is slated for completion by December (PW—Nov.6'59,p120). Its first leg, from Midland, Tex., to McPherson, Kan., is expected to be in operation by Oct. 31.

Mined UNDERGROUND STORAGE FOR LPG
ENGINEERS . . . . CONTRACTORS
FENIX & SCISSON, INC.
5805 E. 15th • TULSA 12, OKLAHOMA



Marvin Grove says–

"ONLY A CAPTIVE RUBBER PARTS PLANT COULD GIVE OUR VALVES THE DEPENDABILITY YOU DEMAND"

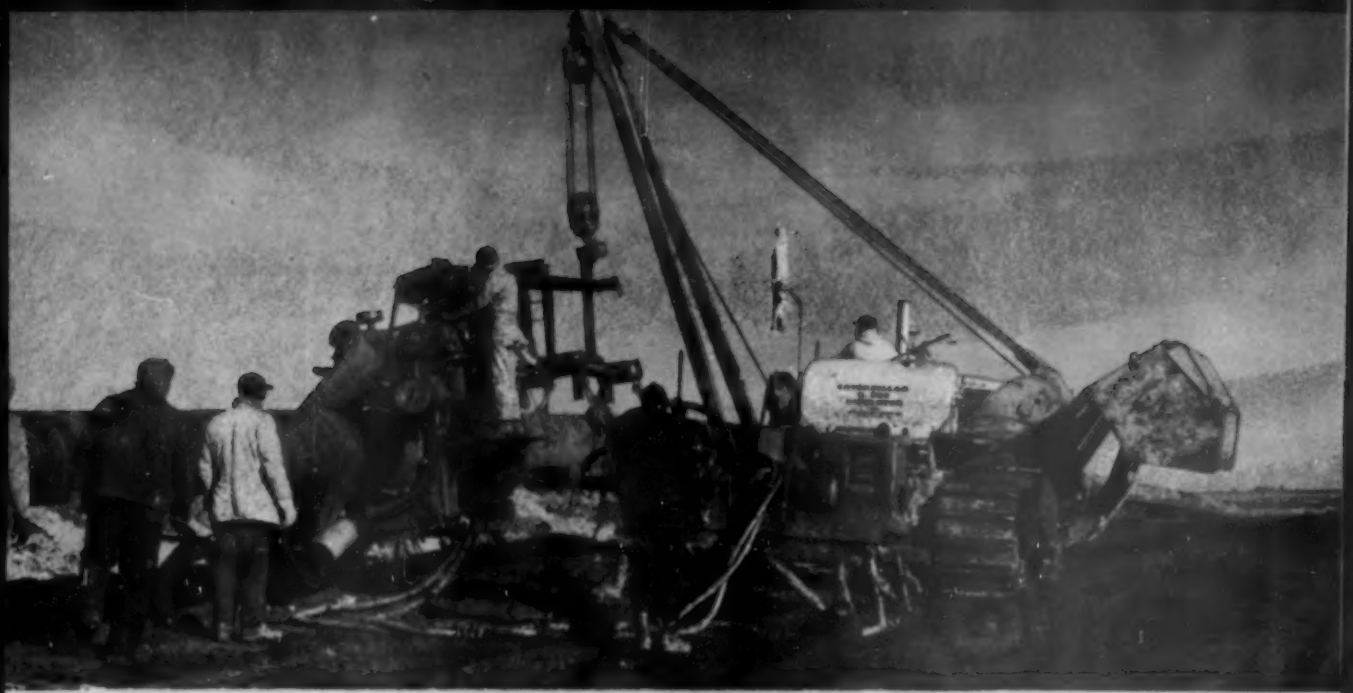
We custom designed and hand-made our own precision presses to produce high-spec rubber parts for our valves and regulators. From raw polymer, our plant-within-a-plant produces "O" rings, diaphragms and sleeves with precision measured to "machine tool" tolerances. Grove Valve and Regulator Company invested in this unique facility as another step to assure our customers in the petroleum, missile and rocket industries that the dependability of Grove valves and pressure regulators is worthy of their trust.

GROVE VALVE AND REGULATOR COMPANY

A Subsidiary of Walworth

Oakland 8, California • Houston • Los Angeles • Odessa • Tulsa • Denver
Chicago • New York • Dallas • Pittsburgh • Farmington, N. M. • Lafayette, La.
Harvey, La. • Oklahoma City • Longview, Tex. • Pampa, Tex.
In Western Canada: Grove Valve Ltd., Edmonton

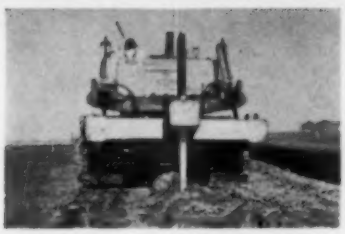
TOUGH WINTER JOB WITH CATERPILLAR'S NEW



New Cat No. 583 Series H Pipelayer cradles for the dope and wrap machine. It is one of 14 Caterpillar-built rigs used on this spread by Engineers Limited Pipeline Co., El Cerrito, California.

New Cat No. 572 Series D Pipelayers handle 26-in. pipe. Production on the 138-mile project averaged 8000 to 9000 feet a day.

---EASIER EQUIPMENT



New Cat D9 Series E Tractor with Kelley Ripper manufactured by Crutcher • Rolfs • Cummings, Inc., rips through frozen ground. The D9 also handled clearing and backfilling jobs.

You expect problems on any pipeline job. And this one, from Rossville, Illinois, to White Pigeon, Michigan, is no exception. Engineers Limited Pipeline Co. has the contract for laying 26-in. pipe on this 138-mile stretch for the Trunkline Gas Co. of Houston, Texas. To push the job through, Engineers Limited set up an equipment spread on each end of the line—*100% Cat*.

The job started in December under severe winter working conditions. Frozen ground presented a digging problem. When it thawed, there was a drainage problem in areas with high water levels. Cat equipment on the western spread included a giant new D9 Series E Tractor with Kelley Ripper ripping the frozen ground in one pass . . . a new No. 583 Series H Pipelayer alternating between lowering and wrapping duties . . . five new No. 572 Series D Pipelayers with cradling and lowering-in assignments . . . and D8 and D7 Tractors.

Have you seen the new pipelayers?

New model or old-timer, Cat pipeline rigs get tough jobs done in a hurry. But to know what *performance* really means, look at the three new Cat-built Pipelayers—they incorporate advances in design and manufacture that increase your production and lower your operating and maintenance costs. They are briefly described here, but for complete information, see your Caterpillar Dealer. Learn about the giant strides in progress made in the three newest Cat pipeline rigs.

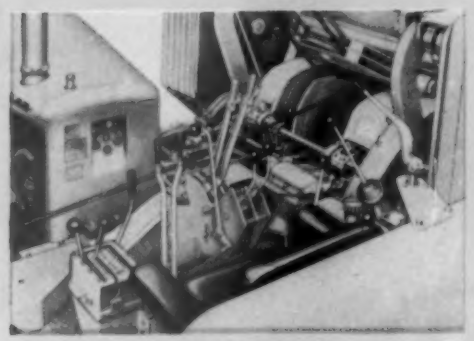
Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MODERN, HEAVY-DUTY PIPELAYERS FOR THE HARD WORK

3 NEW CAT-BUILT PIPELAYERS



No. 583 Series H

235 HP 137,000-lb. lift

Now optional on the No. 583—Power Shift Transmission! Big boon to any operator, it gives the No. 583 new finger-touch control, split-second gear changing . . . new precision control even in the toughest terrain . . . new top efficiency in all speeds and working conditions. The heaviest pipe jobs can now be handled even faster with the No. 583 with Power Shift Transmission! And the closely-retractable counterweights and good machine balance under load make the No. 583 champ of any job.

No. 572 Series D

140 HP 86,000-lb. lift

A new Turbocharged Cat Engine gives the new No. 572 a 9% increase in power over the former model. The most modern pipelayer in its class, it has such advanced Caterpillar features as lifetime lubricated rollers . . . the dry-type air cleaner, which removes 99.8% of all airborne dirt from engine breathing . . . and many others. It's the "take charge" machine for handling 26-in. pipe with capacity left over.

No. 561 Series B

93 HP 38,800-lb. lift

A new power plant that delivers 93 flywheel HP is designed for high torque at slow speeds, long life under heavy loads. The No. 561 is available with hydraulically-controlled counterweights or stationary arrangements for a wide range of lifting capacities. A new cockpit provides more comfort, easier control. Other features are the exclusive Cat oil clutch . . . hydraulic track adjusters that permit track adjustment with the easy stroke of a grease gun . . . and, of course, lifetime lubricated rollers. This new rig can handle more of your jobs with ease, speed and profit!

This announcement is neither an offer to sell nor a solicitation of an offer to buy any of these securities. The offering is made only by the Prospectus.

NEW ISSUE

March 31, 1960

Mid-America Pipeline Company

$20,500,000

6½% Subordinated Debentures, due March 1, 1980

and

1,435,000 Shares

Common Stock

(Without Par Value)

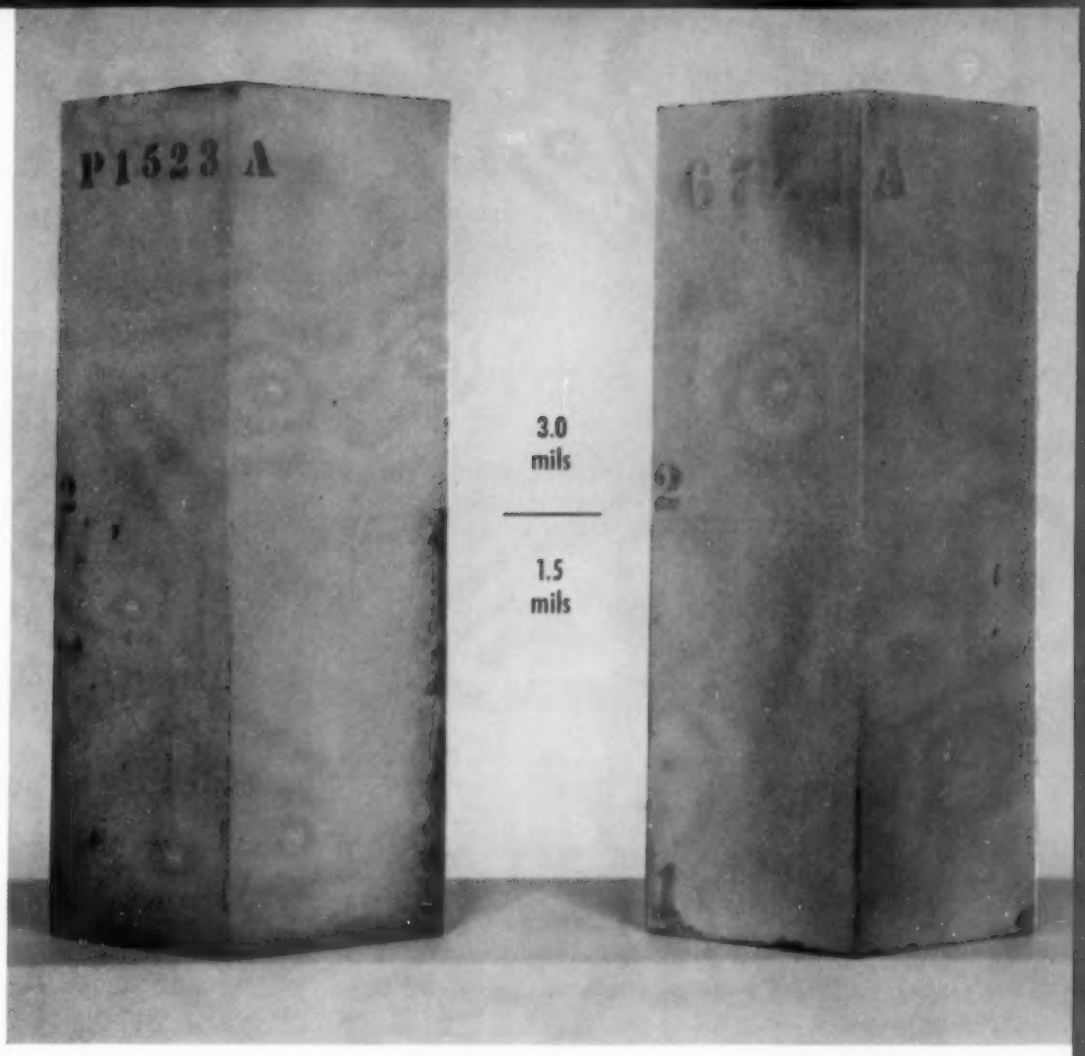
Offered in Units, each consisting of $50 principal amount of 6½% Subordinated Debentures and 3½ shares of Common Stock which will not be separately transferable prior to May 1, 1960.

Price $73.50 per Unit

(Plus accrued interest on the Debentures from March 1, 1960)

Copies of the Prospectus may be obtained in any State only from such of the several underwriters, including the undersigned, as may lawfully offer the securities in such State.

Bear, Stearns & Co.			**White, Weld & Co.**
Goldman, Sachs & Co.	**Hornblower & Weeks**		**Carl M. Loeb, Rhoades & Co.**
Paine, Webber, Jackson & Curtis	**A. C. Allyn and Company** Incorporated	**A. G. Becker & Co.** Incorporated	**Clark, Dodge & Co.**
Drexel & Co.	**Equitable Securities Corporation**	**Hallgarten & Co.**	**Hayden, Stone & Co.**
Hemphill, Noyes & Co.	**W. E. Hutton & Co.**	**Ladenburg, Thalmann & Co.**	**W. C. Langley & Co.**
F. S. Moseley & Co.	**Reynolds & Co.**	**G. H. Walker & Co.**	**Wertheim & Co.**
Bache & Co.	**J. M. Dain & Co., Inc.**	**R. S. Dickson & Company** Incorporated	**R. W. Pressprich & Co.**
Shearson, Hammill & Co.	**Shields & Company**	**Allen & Company**	**Baker, Weeks & Co.**
Alex. Brown & Sons	**Burns Bros. & Denton, Inc.**	**Dick & Merle-Smith**	**Francis I. duPont & Co.**
Estabrook & Co.	**Johnston, Lemon & Co.**	**McDonnell & Co.** Incorporated	**The Ohio Company**
L. F. Rothschild & Co.	**F. S. Smithers & Co.**	**Stroud & Company** Incorporated	**Spencer Trask & Co.**
Tucker, Anthony & R. L. Day	**Robert W. Baird & Co.** Incorporated	**Ball, Burge & Kraus**	**J. Barth & Co.** **Blair & Co.** Incorporated
J. C. Bradford & Co.	**Burnham and Company**	**Chaplin, McGuiness & Co.**	**Robert Garrett & Sons**
J. A. Hogle & Co.	**Newhard, Cook & Co.**	**Rauscher, Pierce & Co., Inc.**	**Riter & Co.**
Schwabacher & Co.	**William R. Staats & Co.**	**Swiss American Corporation**	**Watling, Lerchen & Co.**



Never before such durable protection, never before such lasting appearance in metal protective paints.

Proof anti-corrosion finish paints made with M50® pigment give unique freedom from bilging

Compare ... for color ... the gray alkyd finishes on the two exposure test angles shown above.

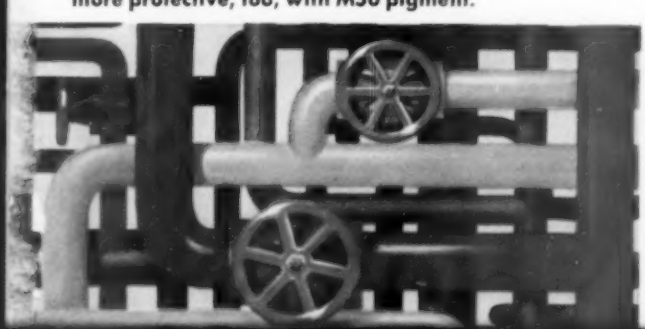
By all previous concepts for anti-corrosion paints, the one on the left should be the darker, should show some splotchiness . . . even though the paint on both angles came out of the same can. That's because the angle on the left was exposed (four years, 45°S) to the heavily sulfur-laden industrial atmosphere of Perth Amboy, N. J., while the angle on the right was exposed (four years, 45°S) only to the normal atmosphere found at National Lead's Sayville, L. I. Test Station.

As you can see, the color difference . . . bilging . . . that you might expect from SO_2-caused precipitation simply has not developed in this paint made with *M50* pigment.

Combined with its unique resistance to discoloration by the chemicals found in industrial atmospheres, fused M50 basic lead silico chromate pigment demonstrates exceptional rust inhibitive action.

Now, with *M50* pigment, your regular paint suppliers can provide standard or deep-coat anti-corrosion primers, intermediates and finishes with superior rust inhibition, superior weather resistance, and excellent tintability. Paints that are more durable and don't bilge. The *M50* pigment is suitable for use with a wide variety of vehicles.

Color code paints look better longer, are more protective, too, with M50 pigment.

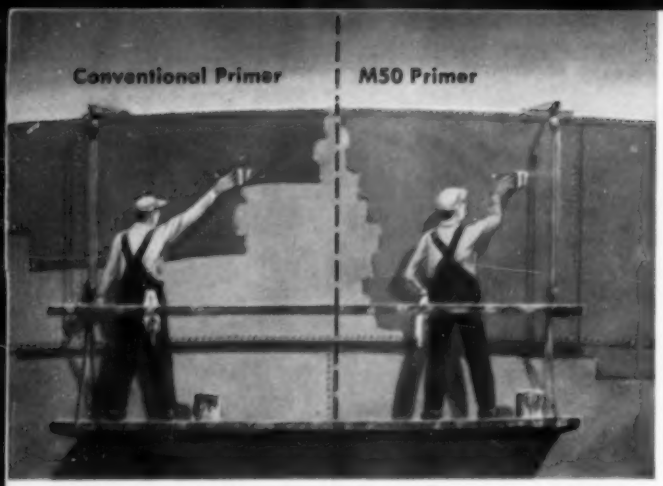


See, on the next page, more details ... and how you can get these new, much more durable anti-corrosion paints.

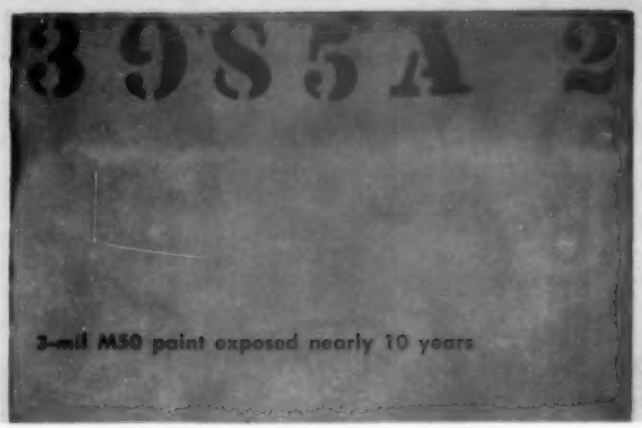
M50 an **oncor** *pigment development of*

National Lead Company

111 Broadway, New York 6, N. Y.



Weight for weight, anti-corrosion paints made with high-bulking M50 pigment cover 40% to 60% more steel.



Mil for mil, M50 paint films show better rust-inhibitive performance, lengthen the painting cycle interval.

Here's evidence M50 pigment paints reduce anti-corrosion maintenance painting costs two ways

On the preceding page you have seen evidence that *M50* pigment paints are unique among anti-corrosion paints for anti-bilging properties. Exposure tests at National Lead's Sayville, L. I. Test Station have demonstrated these metal-protective paints are also unique for their anti-corrosion action, their weather-resistance, their color stability and many other performance characteristics.

Above you see evidence that *M50* pigment paints are equally unique in their ability to provide anti-corrosion maintenance painting economy. The illustration at left gives you a visual comparison between the coverage of a conventional anti-corrosion primer and an equal weight of an *M50* counterpart of this same primer (Fed. Spec. TT-P-86a, Type I). Clearly a given weight of *M50* pigment paint goes further.

The picture at the right shows the condition of a 3-mil *M50* pigment *primer* exposed nearly 10 years *without a finish coat.* You can see that even in this severe test . . . an unprotected primer . . . anti-corrosion action is still being obtained. The repainting surface is still in good shape. Weather has not adversely affected protection. Imagine how many years of service you can anticipate from anti-corrosion *M50* finish coats applied over anti-corrosion *M50* primers in the normal or deep-coat systems!

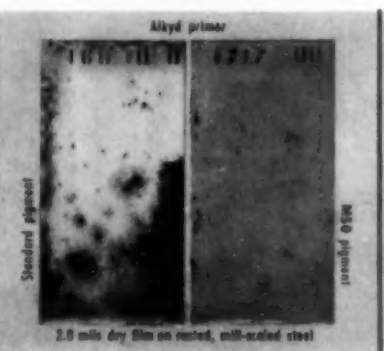
Based on cost per sq ft per year, M50 pigment paints can greatly reduce the cost of your anti-corrosion maintenance painting.

Why M50 Defense in Depth paints give anti-corrosion beyond all former concepts

1 standard pigment alkyd primer coat
2 standard pigment alkyd primer coats
Gray Alkyd Finish Coat
2 M50 pigment alkyd primer coats
1 M50 pigment alkyd primer coat

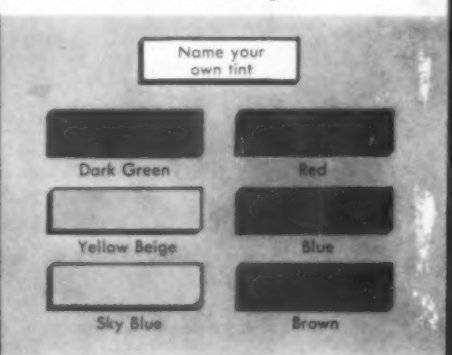
Exposed 9 years, 45°S. Each coat 1.5 mils

Proved corrosion and weather resistance



Exposed 45°S, 1 yr ind. atmos, 1 yr normal atmos.

Proved outstanding for film strength, durability



Colors above available in conventional and heavy-coat paints

A wide range of stable colors can be produced

Are you concerned with tank or structure maintenance painting in your firm? If so, you are invited: (1) to visit National Lead's Sayville, L.I. test station, where you will see the results of the 20 years research that lies behind the *M50* pigment particle and the more than 10 years of exposure testing that lies behind *M50* pigment Defense in Depth paints; (2) to send coupon below for National Lead booklet, "Defense in Depth" and typical *M50* tank paint specifications.

Next time you purchase, specify *M50* pigment paints. Any paint manufacturer can supply you.

M50 Defense In Depth

National Lead Company,
111 Broadway, New York 6, N. Y.

Gentlemen: Please send me the "Defense in Depth" booklet together with typical tank paint formulas and color chips that I can use in specifying M50-type tank paints.

ancor

Name_____ Title_____

Firm or Dept._____

Address_____

City_____ State_____

Electric Heat Readying its Attack

This "newcomer" in domestic heating may emerge as another strong and aggressive competitor for oil.

Electric heat promoters are preparing themselves for an aggressive move into oil's prime market—the Northeast.

That was the spectre raised last week at the 38th annual convention of the Oil Heat Institute of America in New York.

Many of the 1,200 marketers and contractors who gathered to celebrate oil heat's Diamond Jubilee anniversary heard Reggie Moffat, general manager of L. A. Johnson Fuel Oil Co., warn that "the electric utility boys are training for an invasion of the North." Moffat said he has watched electricity become a strong rival of gas and oil in the South from his position as president of the Better Home Heat Council of Florida.

In one northeastern city (Springfield, Mass.), the number of new homes using electric heat is already rising faster than in sections of the Midwest and in the Tennessee Valley, where electric heat enjoys certain cost advantages, according to Bob Barr, general sales manager of Jet-Heet, Inc., Englewood, N.J.

At present, slightly less than 600,000 homes are completely heated by electricity, which is about 1% of the total national market, according to Arthur McManus, chairman of the electric heat study subcommittee of the National Assn. of Plumbing Contractors.

But about 90% of these homes are concentrated in the South and west of Colorado, where the new heat has been mainly a competitor for gas.

As electricity moves north, however, it will become a strong rival of oil heat as well, especially in new homes and in communities that are beyond the reach of gas lines.

The high cost of heating with electricity remains its essential drawback.

Here's how it compares to oil, according to Barr: For 1¢ worth of electricity, a home owner will receive around 2,300 Btu. of heat. But for 1¢ worth of fuel oil (at 14.2¢ a gal.), a home owner will receive 10,000 Btu.

The rate cost of electricity is figured at 1½¢ per kwh., which is a minimum price in most areas of the country.

For most utilities, the cost of generating and transmitting electricity averages 0.014¢ per kwh., McManus said, and only in a few sections of the South does the cost fall low enough to permit utilities to charge less than 1¢ per kwh.

It was pointed out, however, that because electric units are installed in individual rooms, unlike central oil heating units, electric heat offers better heat utilization than oil. This factor tends to lessen its cost to the home owner.

But the high cost of electric heat is secondary to new-home builders, who find that installation costs of electric units are lower than those of central oil heating equipment.

Because the cost of installing electric units is often included in the total electrical contracting cost, it is difficult to compare the cost of electric units and oil units. But both Barr and Moffat agreed that builders are finding significant cost savings in electric heating.

Many people have been won over to electric heat by the aggressive tactics of electric heat promoters. But oil marketers were told they have good grounds for challenging the claims made for electric heat.

Richard C. Wright, vice-president of Iron Fireman Manufacturing Co., pointed out to the OHI group that electric utilities have been advancing many claims for the new heat that can be bettered or—at least—equaled.

Because of the lack of air circulation in radiant electric heating (representing more than 75% of the units), Wright said that dust and lint may collect, and odors will not be ventilated properly. This lack of circulation and ventilation can create unhealthy conditions in a home, he added.

Furthermore, Wright challenged the claim that electric heat was an "even heat," and said that many modern oil units can match the utilities' offers of individual room temperature controls.

As for safety, Wright said that a hot electric base board can be a "hazard."

In addition, he said that electric heat requires more insulation than oil, which can add significantly to its cost.

Fair Trade Act Gets New Push

The federal fair trade bill, which has been held up in the House rules committee since last spring, is getting a renewed push by its supporters.

The bill (HR 1253), which would permit oil marketers and other manufacturers to establish minimum fair trade prices for their products, reached the rules committee after hearings in the House commerce committee.

The new push may dislodge the bill and bring it to the House floor, supporters believe. But it still faces a stiff test in the Senate and at the White House. Despite this slow progress, the bill is being watched closely by oil marketers because of the far-reaching and controversial effects it would have (PW—Apr.17'59,p62).

The new impetus behind the bill stems from several recently suggested amendments, which are said to be backed by many congressmen both in the House rules committee and in the House commerce committee.

These amendments result from discussions among "various industry groups interested in fair trade," such as druggists and oil marketers, according to one source.

In the course of these discussions, it was agreed that several amendments are desirable to "clarify and strengthen the basic objectives of the bill and to broaden the support for this legislation."

To get the amendments added to the bill, the House commerce committee must first ask the rules committee for a new hearing.

One amendment would impart a "states' rights" character to the bill, permitting all states to disallow fair trade within their borders.

Fair trade supporters believe that this amendment would overcome the objection of many marketers—particularly those in the South, who feel that the present bill overrides states' rights.

It is not the purpose of the federal fair trade bill to overrule any state's objection to fair trade, according to Dwight T. Colley, marketing vice-president of Atlantic Refining Co. Rather, the bill is designed to estab-

lish a consistent interpretation of fair trade throughout the nation, says Colley.

Another amendment would permit oil companies and other manufacturers to exclude from fair trade certain commercial accounts, such as large industrial fleets.

Actually, this amendment merely clarifies the wording in the present bill. Where HR 1253 permits manufacturers to "differentiate" among accounts in setting up fair trade prices, the amendment makes it clear that a manufacturer can exclude certain large volume accounts from fair trade pricing.

Similarly, another amendment would permit an oil company to fair trade at the retail level even though it makes sales directly to consumers.

This amendment would overcome the obstacles created in 1957 in the case between Esso Standard Oil Co. (now a division of Humble Oil & Refining Co.) and Secatores, Inc., an East Boston retailer.

In this case, the court held that manufacturers are competing with retailers when they sell directly to consumers, and therefore should not be permitted to set minimum prices for the retailers.

This proposed modification of the fair trade bill would permit oil companies to set company-station prices at the same minimum level as their dealers' prices, without incurring suspicion of price collusion, according to Colley.

The amendment would be particularly important to suppliers who are obliged to operate salaried service stations on turnpikes, and to others who prefer to use salaried stations for training purposes.

Another amendment would clearly remove the fair trade bill from the responsibility of the Federal Trade Commission.

The bill's present wording refers to violations as "unlawful," which is the same word used in the Federal Trade Commission Act to characterize unfair competition that is subject to the commission's jurisdiction. The implication that FTC may be involved in fair trade violations is to be avoided by changing the word "unlawful" to "actionable."

Suppliers who wish to take action on violations would then seek assistance from the courts.

What's New / IN MARKETING

The merger of the Oil Heat Institute of America and the National Fueloil Council was approved by OHI last week.

The merger, which would establish a single oil heat organization (PW—Nov.20'59,p45), would join the two groups with the research coordinating activity of the Fuel Oil Committee of the American Petroleum Institute.

•

Vickers Petroleum Co. is offering its dealers in Kansas "a station that can be opened the same day it's delivered."

Cost: less than $6,000 to dealers 400 mi. from Wichita. The prefabricated station is available to all Kansas dealers within 24 hours, says Vickers.

•

The "first antifreeze that lasts year after year" has been developed by Du Pont.

"Telar" contains an inhibitor that stops rust clogging (chief cause of summer boil-overs) and turns from red to yellow if the cooling system threatens to break down.

•

The typical oil jobber started 20 years ago with $18,300; he increased his net worth to $107,000 by 1958, according to a Dun & Bradstreet, Inc. survey, released this week.

The jobber's net profit before income taxes was 1.6%, with net sales of $565,000. Inventory turnover averaged 25.1 times a year.

•

Oil-powered air conditioning equipment installed in four Florida cities has "passed all tests for both cooling and heating and exceeded expectations in every respect," says the Better Home Heat Council there.

The conditioners were built by Arkla Air Conditioning Corp., Little Rock, Ark.

•

How much is a new heating oil account worth? Valley Oil Co., in Connecticut, is willing to pay up to $65 for each new one it can get.

William F. Briggs, president, said last week that his company now has 7,500 retail accounts, compared to 4,000 two years ago. Half of the new accounts were secured from advertising and through salesmen, half from buying out smaller companies.

•

Average octane ratings climbed last month. Regular increased by 0.1-octane to 92.4-octane, and premium moved up by 0.2-octane to 99.5-octane.

Compared to March, 1959, regular showed a gain of 0.7-octane, and premium a gain of 0.4-octane, according to Ethyl Corp.

•

Arkansas Louisiana Chemical Co. has entered wholesale and retail gasoline marketing in Arkansas.

The company has opened retail outlets selling "Blue Streak" premium-grade gasoline and "Arkla Blue" regular-grade in Little Rock and El Dorado. In addition, the company is planning to build a bulk station in Little Rock.

for QUALITY... QUANTITY... SERVICE

Whatever the GRADE and the VOLUME of

NATURAL GASOLINE

Just rely on WARREN'S versatile facilities to give you dependable deliveries . . . WHERE and WHEN and the WAY you want them.

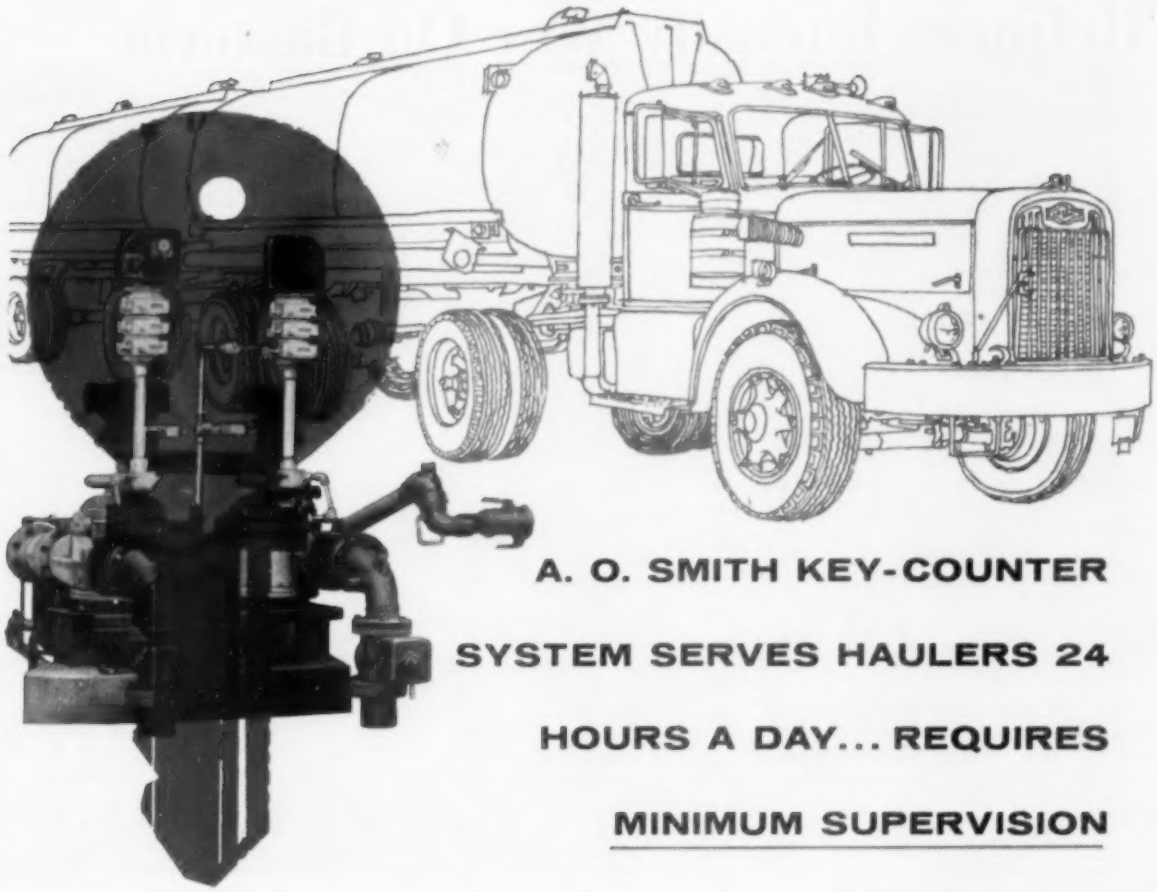
WARREN

PETROLEUM CORPORATION

TULSA, OKLAHOMA • Cable Addresses: STAVOLENE, WARREN

EXPORT TERMINALS: CORPUS CHRISTI, PORT ARTHUR, BAYTOWN, TEXAS CITY AND WARRENGAS (HOUSTON), TEXAS, SAN PEDRO, CALIF.

This bottom-loading operation is on its own!



A. O. SMITH KEY-COUNTER SYSTEM SERVES HAULERS 24 HOURS A DAY... REQUIRES MINIMUM SUPERVISION

"Turn-key" service by A. O. Smith — the *first* bottom-loading, key-counter installation in operation. Opened at one of the northern terminals of a major oil company, it has shipped several million gallons of fuel oil during the first six months of operation.

It works like this! Driver presets quantity wanted (choice of No. 1 range oil or No. 2 diesel) and opens A. O. Smith's step-stop valve with *his personal key* for his company's exclusive counter. A. O. Smith's key-counter system does the rest—valve automatically shuts off at preset figure and key-counter registers the exact total taken out by the customer. Printed ticket (net gallons corrected automatically to 60°) records each transaction for billing.

Advantages are two-fold! The company requires *very little supervision* — one employee leaves new tickets each morning and picks up recorded tickets from previous day's purchases. Hauler can schedule his operation for anytime, day and night, to best fit his requirements. System also eliminates need for additional rolling equipment — makes for more deliveries with less equipment.

To find out more on how A. O. Smith "turn-key" systems can fit into your operation, contact your A. O. Smith meter representative or write direct.

Through research ... *a better way*

A.O.Smith
CORPORATION

Smith-Erie Division

Factory: 1602 Wagner Ave., Erie, Pennsylvania. Offices: Atlanta 5, Ga.; Chicago 3, Ill.; Houston 2, Texas; Los Angeles 22, Calif.; New York 17, N. Y.; Oakland 21, Calif.; Tulsa, Okla. Canada: Toronto 12, Vancouver 1. A. O. Smith INTERNATIONAL S.A., Milwaukee 1, Wis., U.S.A.

Refiners Intensify War On Bacteria

The harmful effects of bacteria on petroleum products in storage are receiving increasing attention from oil companies and the government.

Bacterial activity in crude, along with ways of overcoming it in oil fields, is a well-known subject. But the action of bacteria on refined products has received attention only in the last few years.

Several refiners have made extensive studies of bacterial action in refinery products. Among them are Sinclair Refining Co. and Standard Oil Co. (Ohio). Esso Research & Engineering Co. has worked on the problem in cooperation with the U. S. Navy. Wright Air Development Center has also been very active for the benefit of the U. S. Air Force.

The results of Sohio's recent work on bacterial activity were described this week by two of its research engineers, R. J. DeGray and L. N. Killian, at the Cleveland meeting of the American Chemical Society.

The bacteria which cause trouble in storage tanks are essentially of the aerobic type, that is, they must be supplied with air to be able to live, according to Sohio.

Surprisingly, these bacteria can live although blanketed by thousands of barrels of petroleum products. The roiling action in working tanks is sufficient to supply them with air.

Sohio found this out by following for seven months bacterial counts in the water bottoms of ten tanks at two refineries and one bulk terminal. It also found that a water with a pH of 7 (neither acid nor alkaline) was most favorable to bacteria growth.

This aeration process, Sohio believes, prevents the formation of anaerobic bacteria—bacteria that live only where no air is present—such as are frequently found in oil wells.

Sinclair, on the other hand, found that the presence of anaerobic bacteria has also been established in storage tanks where there is deep pitting.

"These bacteria," says F. M. Watkins, director of the corrosion division of Sinclair, "multiply beneath a film of rust and sludge, building their own barricade against oxygen with the corrosion products of which they accelerate the formation. The resulting blisters, rapid corrosion, and deep pits are occasionally found on the interior of tank bottom surfaces."

The roiling action of storage tanks was duplicated in Sohio's laboratory by a special testing device (diagram).

Bottles similar to one-pint Mason jars were fastened mouth-to-mouth on 16 spokes of a wheel. The wheel was rotated at 3 rpm. Since each pair of bottles is upended twice in each revolution, the contents of the bottles slosh back and forth six times each minute. This motion simulates what happens in a storage tank when huge volumes of petroleum products are admitted—or removed—and keep the contents of the tank "roiling."

Each pair of bottles was filled with 400 cc. of hydrocarbon and 4 cc. of water. Strips of polished, sterilized iron were also inserted in the pairs of bottles for corrosion studies.

The tests pointed the way to certain facts that should be kept in mind when handling petroleum fuels. Among them:

- Bacteria, brought into the picture by any sort of water, feed readily on hydrocarbons. This results in a loss of product.
- Bacteria cause formation of gums, hydrogen sulfide, peroxides, acids, and slimy filaments at the interface between water and petroleum products.
- Bacterial action is much more pronounced with a roiling motion than in stationary status.
- Bacterial growth is considerably higher with kerosine than with gasoline.

Loss of product, corrosion of tanks, clogging of filters and of metering instruments, and fuel deterioration are among the harmful effects of bacteria growth in fuels.

The Air Force and the Navy Dept. are particularly interested in this work, since difficulties are currently experienced on aircraft carriers, where the complete exclusion of water is almost impossible to accomplish.

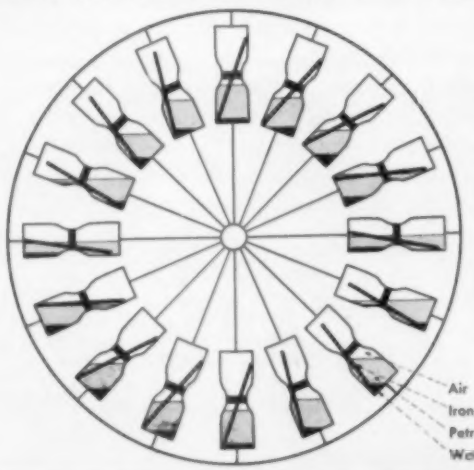
The Sohio tests emphasize that bacterial deterioration is much more serious with jet-fuel, of the kerosine-gasoline type, than with gasoline. This is confirmed by the frequent cases of plugged filters experienced with jet-fuel that has been in contact with water.

The activity of bacterial growth is increased by the presence of rust. Not only do bacteria encourage rust, but rust encourages bacteria, says Sohio.

Tests were made with strips of iron in the containers on the experimental wheel. Slow rotation was carried out for 48 hours. "Bacteria such as those present in the water-bottoms of gasoline storage tanks cause rust above and beyond that normally caused by water itself," the Sohio engineers said. "As the bacterial slimes hold rust and other sediment in suspension, the dispersion at the interface is increased, and further multiplication of bacteria is encouraged."

Watkins of Sinclair gave PETROLEUM WEEK this explanation: "a hydrogen film is present on the surface of a freshly corroding steel. When bacteria use this film as food, more

How Sohio Simulates a Working Tank



HALF-FILLED BOTTLES bolted on 16 spokes of a wheel contain petroleum fuel and some water, to study the growth of bacteria. The roiling motion of a working storage tank is simulated as the wheel rotates at 3 rpm. Polished strips of iron are used to study the formation and action of rust.

They broke up the pellet traffic jam...

with Rockwood Ball Valves

A costly and recurrent problem in a large southern synthetic fibre mill was the jamming of polymer pellets as they came from supply hoppers. Source of the trouble was the tapered-throat design of the valves. Even with valves fully open, pellets piled up. In addition, this packing-in action caused severe abrasion on the valves. The problem was solved by replacement with Rockwood Ball Valves. Their *straight-through-opening* feature now permits pellet to flow smoothly . . . and the wear problem has been automatically eliminated because Rockwood valves offer no more resistance to flow than the pipeline itself.

What's more, after hundreds of openings and closings Rockwood Ball Valves still provide *positive leak-proof* shut-off means. A retainer spring, which *automatically compensates for pressure variations* keeps the seat snug against the ball and holds tight even under vacuum.

Thousands of Rockwood Ball Valves are giving efficient service and cutting costs throughout industry — in oil refineries, textile mills, paper, chemical and rubber plants.

There are types and sizes to meet every requirement in *your* plant. Write today for the illustrated folder on Rockwood Ball Valves. Tested and listed by Underwriters' Laboratories, Inc. Rockwood Sprinkler Company, A Division of The Gamewell Company, 250 Harlow Street, Worcester 5, Mass. Distributors in principal industrial areas.

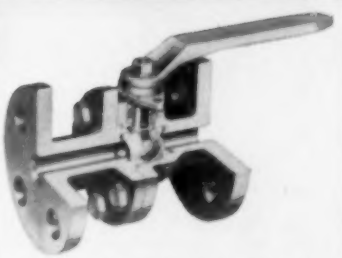


Fig. 254 Type 316 Stainless Steel

Rockwood Ball Valves are available in pipe sizes ⅜" through 16" in screwed ends 150 lb. and 300 lb. flanges. All internal parts are of Type 316 stainless steel with spring-compensated TEFLON* seats. Recommended for 600 p.s.i. working pressure and suitable for temperatures ranging from—100° F. to 400° F. All sizes are available with two retainer springs and two Teflon seats.

*DuPont Reg. T. M.

ROCKWOOD BALL VALVES

FULL, ROUND FLOW

corrosion takes place to reestablish the protective hydrogen film."

The growth of bacteria in both gasoline and kerosine is stimulated by the use of some types of rust inhibitors, according to Sohio.

Rust inhibitors of the surface-active type reduce the interfacial tension of the water versus the hydrocarbons. Thus, the availability of the hydrocarbons to the bacteria is increased, and their growth is favored.

Complete absence of water would be the ideal solution to the bacterial deterioration problem. This, however, is practically impossible, because there is always present a certain amount of condensation from atmospheric moisture.

Exclusion of water is especially difficult in modern jet aircraft. A jet plane usually has no single fuel tank, but a labyrinth of interconnecting cells with numerous low points where water collects.

Meanwhile, certain bactericides must be used to break the vicious circle.

The selection of an adequate rust- or corrosion-inhibitor, which does not favor bacterial growth, is essential.

"There is no question but that rust inhibitors differ greatly in their ability to stimulate or retard growth of bacteria in petroleum products," says Watkins.

Sohio has concentrated its study on boron compounds.

It has found that the chain length of the boron compounds causes their bactericidal activity to vary greatly. For example, the action of a series of trialkyl borates was examined. The trihexyl and trioctyl borates proved decidedly better than those containing a lower number of carbon atoms.

Glycol borates were also examined. They showed similar differences in bactericidal activity according to the number of their carbon atoms.

Chemical additives are presently being sought that act as germicides without changing the performance characteristics of the fuel.

SPECIAL REPORT!

Two Refinery and Petrochemical Instruments essential to maximum production efficiency...serve as basic nucleus for Computor Control.

PRECISION INSTRUMENTS SIGNIFICANTLY REDUCE PROCESSING COSTS . . . WHILE SIMPLIFYING OPERATIONS

. . . Simple, uncomplicated instruments
. . . Proved results in actual operation
. . . Available from Precision—the only COMPLETE one source line of processing controls

CONTINUOUS FLASH POINT RECORDER

Check these features:

1. Increases profits . . . provides the maximum yield of a desired fraction
2. Shows upsets and changes in operating conditions quickly . . . continuous, accurate "Control Chart" type of record
3. Reduces tower start up time . . . usable products start flowing into the storage tank sooner
4. Eliminates tedious laboratory delays . . . saves time and labor

AUTOMATIC END POINT RECORDER

Check these features:

1. Provides maximum yields of desired fraction . . . greater control of fractionations
2. Gives ASTM correlation
3. Operates at atmospheric pressure
4. Structurally simple . . . rugged . . . contains no complex parts
5. Speed—End point data cycle complete in 20 minutes
6. Accuracy—Reproducibility within ±2°F.
7. Convenience—*Records right on the site*
8. Safety—An explosion proof instrument

Ask for bulletins fully describing the nature, operation, interpretation and construction of these valuable, money saving instruments.

LICENSED BY STANDARD OIL COMPANY (INDIANA) PATENTS PENDING

Precision Scientific Development Co.

3741 West Cortland St., Chicago 47, Illinois

Analyzers Evaluated In Portable Unit

What is the economic value of modern analyzers installed on processing units?

Instruments that analyze process streams physically and chemically play an important part in today's refinery. But exactly where should these be located on the units, and how many of these analyzers should there be befor a point of no return is reached?

To obtain the answer to that question Esso Research & Engineering Co. had a semiportable laboratory built to its specifications.

The laboratory, installed inside a modified aluminum truck body, was built about a year ago by Perkin Elmer Co. It measures 8x8x14 ft., is skid-mounted, and can easily be moved with the help of a traveling crane.

The portable lab, which has recently completed its first field assignment, serves three purposes. These are:

- To evaluate different types of analyzers.
- To make an analytical study of a processing unit.
- To train unit operators in the use of analytical equipment.

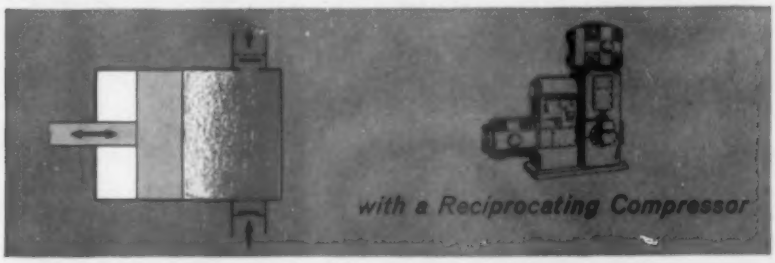
At Esso's Baton Rouge plant the lab was used to make an exhaustive study of a Powerformer unit.

"What would normally take years to do," says Esso, "was accomplished in just a few months."

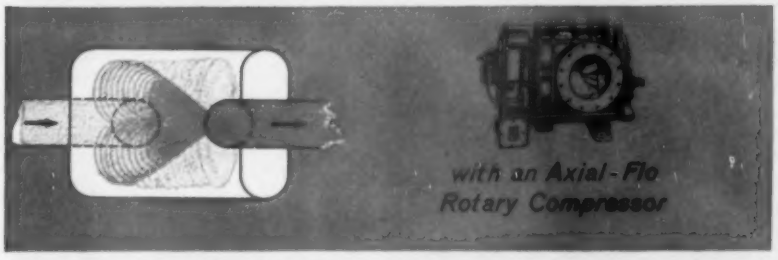
TAKE ANY GAS...

WHIRL IT

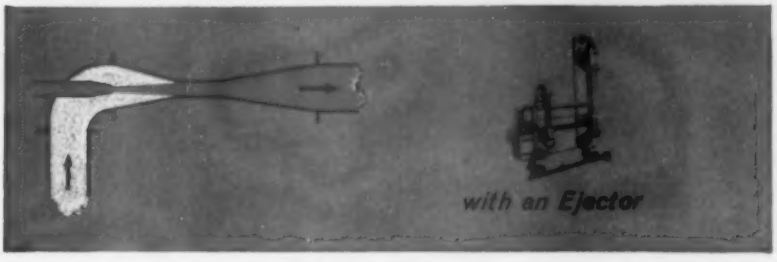
PUSH IT



SQUEEZE IT



PULL IT



...but only ONE METHOD IS BEST for a given job and only Ingersoll-Rand offers ALL FOUR!

For any pressure, or gas, Ingersoll-Rand can supply whatever type of compression or evacuation system will meet your exact requirements to *best advantage*—with maximum efficiency and dependability. For completely unbiased recommendations that will save you money in the long run, be sure to call in your Ingersoll-Rand engineer the next time you have a compression problem.

Ingersoll-Rand

99A14 11 Broadway, New York 4, N. Y.

COMPRESSORS • GAS & DIESEL ENGINES • PUMPS • AIR & ELECTRIC TOOLS • CONDENSERS • VACUUM EQUIPMENT • ROCK DRILLS

Processes Can Be Wired Better, Safer

The selection of the best system of low-voltage electric wiring in a processing plant is a major problem, but considerable progress toward a solution has been made recently.

Low-voltage current in a petrochemical plant is generally under 600 volts; it supplies power to individual processing units, as well as electricity for the control instruments.

Some of the latest experience gained at the Freeport (Tex.) petrochemical plant of Dow Chemical Co. was explained this week at the Houston meeting of the American Institute of Electrical Engineers by A. A. Johnson, of Dow's engineering staff.

For distribution in process areas where no overhead means of support are available, the best solution consists of underground conduits of plastic, in a concrete envelope, Dow found.

An underground duct run directly from the control center to the load is obviously less expensive than a roundabout routing via cable racks, or on pipeways. It requires no maintenance and is well protected physically by its concrete case.

Besides, the plant appearance is neater, and leaves more room for operations.

Polyethylene, styrene, or polyvinyl chloride ducts, as well as ducts made of impregnated wood fiber, are adequate and economical. They can withstand practically all corrosive conditions.

There are objections, however, to complete underground electric distribution, according to Johnson. Among them: lack of flexibility in the event of plant changes or expansion, and need for many manholes for inspection.

For minor plant expansions in nonhazardous areas, where overhead conduit support is available, high-impact polyvinyl chloride conduit is most satisfactory, according to Dow.

This type of conduit has a lower material and installation cost than steel, even though its supports must be more closely spaced. Only disadvantage of plastic conduits in comparison with metallic conduits, Johnson said, is the sacrifice in mechanical strength for protection. On top of a pipeway, however, there is no need for such strength, except in areas that must meet the National Electric Code requirements for hazardous areas.

For general distribution on pipeways in nonhazardous areas, in new plants and in major plant expansions, there is an increasing tendency to use plastic-jacketed multiconductor cables, on cable racks, without rigid conduits.

Aluminum alloy racks may be used if corrosion conditions permit. Metal racks should have timber rungs—treated against deterioration with pentachlorophenol—or stainless steel rungs, to eliminate the need for frequent repainting. Repainting requires the lifting of the cables, always a difficult, tedious process.

One type of rack design used at Freeport has structural steel stringers and a corrugated transit floor; the cables rest on the crests of the corrugations, allowing good air circulation.

In hazardous areas of a processing plant, well-supported mineral-insulated cable should be used.

This cable, said Johnson, has excellent resistance to temperature—better than steel, in fact—and also resists mechanical damage. But its cost, especially for initial installation, is high, because of splices and connections. Its use, therefore, must be restricted to the hazardous areas in which it is required.

For distribution circuits above 600 volts, interlocked armored cable, polyethylene-insulated, with an overall polyvinyl choride jacket, has been found very satisfactory.

These cables—they carry up to 2,300 volts at the Dow plant—can be installed on the same cable racks as the 600-volt circuits, but they must be placed at a sufficient distance from them for isolation. Armored cable of this type is expensive, and is used only where good mechanical protection is required.

Compressed-air piping for pneumatic instrumentation should be given consideration at the time that the low-voltage electric control system is designed.

Air lines are usually ¼-in. pipe or tubing, and are run in bundles. They should be installed overhead, Johnson pointed out, because low points and pockets would collect water that would disturb control signals.

What's New / IN PROCESSING

Development spending at Imperial Chemical Industries' Severnside Works, in Southwestern England, covers construction of ethylene oxide and ethylene glycol producing plants, and of an ammonia plant and associated facilities for making urea and fertilizers.

The first $14-million spending is slated for the ethylene plants. But the company says this expenditure will eventually total $280-million.

The ammonia plant—and its associated facilities—accounts for a $28-million expenditure, and is scheduled to begin production in 1963. Raw materials for the manufacture of ammonia at Severnside will come from light oil fractions.

•

A 140F to 145F micro-crystalline wax has been brought into continuous production at Shell Refining Co.'s Stanlow (England) refinery.

Up to the present time, microcrystalline wax was only available in the United States. Shell plans to market the wax in the United Kingdom and Eire through Shell Chemical Co.

The new wax, which is being sold to the packaging industry, is also suitable for use in laminating work and for frozen food containers.

•

Standard Oil Co. (Ohio) is constructing a new carbon monoxide boiler at its Lima (Ohio) refinery, to reduce fuel costs and increase steam production potential.

The company says fuel savings come from burning carbon monoxide and recovering quantities of heat from the flue gas of the existing fluid catalytic cracking unit. The new boiler will be equipped to burn supplemental fuel—a mixture of refinery and natural gas.

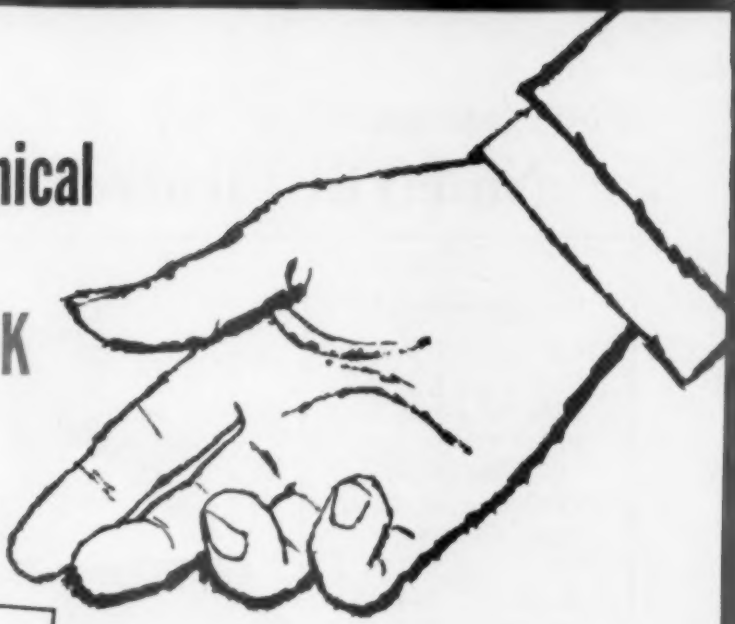
It will also replace about half the present steam producing capacity of the Lima plant, when it is completed in December. The unit, designed by Babcock & Wilcox Co., also has the flexibility to go to a high pressure superheated steam system.

To Serve You Better

Pittsburgh Coke & Chemical

has a

NEW CORPORATE LOOK



PITTSBURGH CHEMICAL COMPANY
A Subsidiary of
Pittsburgh Coke & Chemical Company
INDUSTRIAL CHEMICALS · ACTIVATED CARBON
PROTECTIVE COATINGS

UNITED STATES CONCRETE PIPE COMPANY
A Subsidiary of
Pittsburgh Coke & Chemical Company
CONCRETE PIPE · VITRIFIED CLAY PIPE

GREEN BAG CEMENT COMPANY
A Subsidiary of
Pittsburgh Coke & Chemical Company
CEMENT · MORTAR CEMENT

COKE & IRON DIVISION
A Division of
Pittsburgh Coke & Chemical Company
FOUNDRY COKE · PIG IRON · FERROMANGANESE

To more efficiently serve its customers in the processing, construction and metal industries, Pittsburgh Coke & Chemical Company is now manufacturing and marketing its diversified industrial products through three autonomously operating, wholly-owned subsidiaries and one division.

Pittsburgh Chemical Company, a new organization, combines Pittsburgh Coke's Industrial Chemicals, Activated Carbon and Protective Coatings Divisions and their supporting technical departments. The company will concentrate its expanding production and marketing activities exclusively in the chemical and chemical products field.

The products of Pittsburgh Chemical Company's three divisions—*Pittsburgh* Industrial Chemicals, *Pittsburgh* Activated Carbons and *Pitt Chem*® Protective Coatings—are already well known in the nation's processing and maintenance industries.

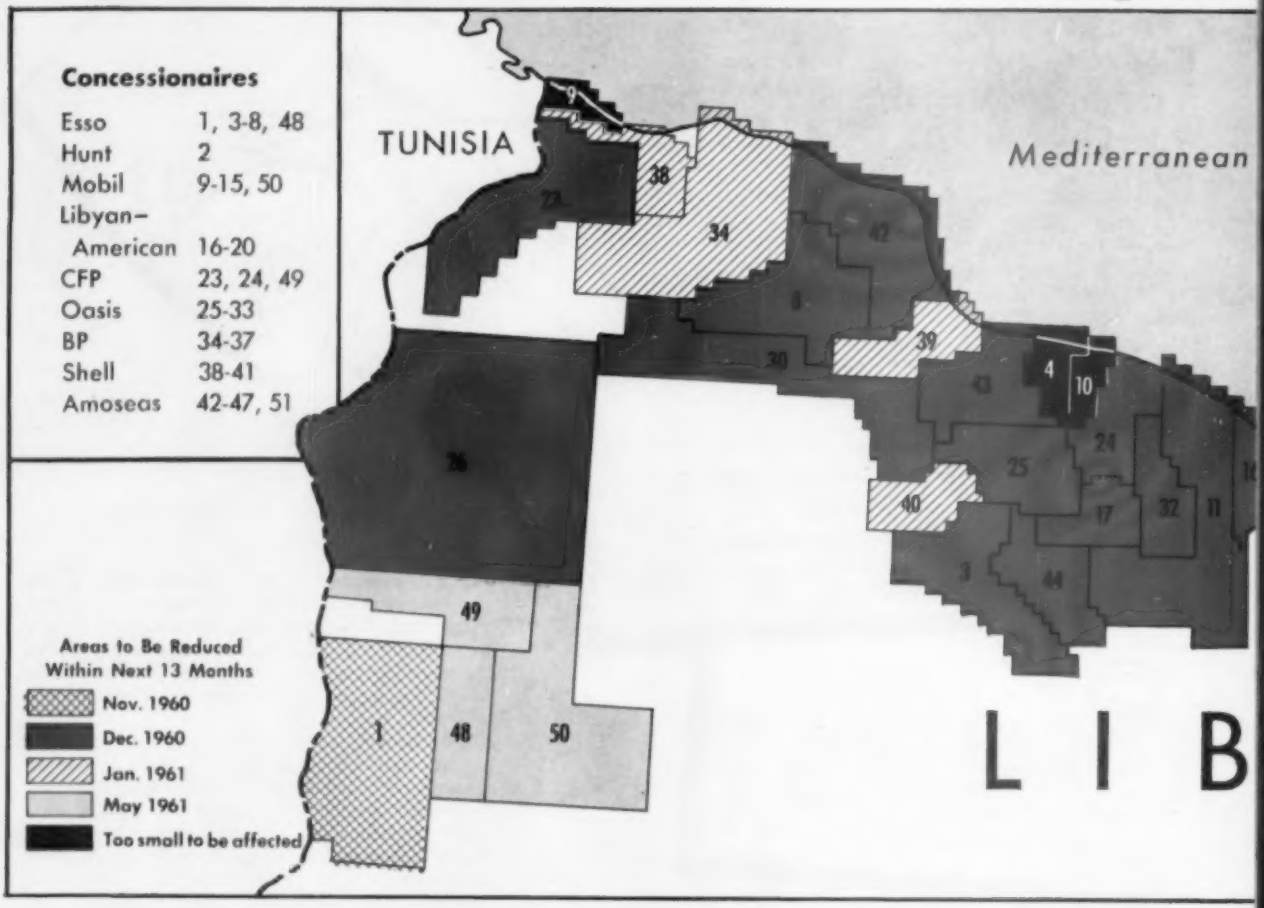
In these fields, Pittsburgh Chemical will vigorously maintain a policy of planned growth and expansion through (1) intensive new process and application research, (2) alert, personalized sales service and (3) responsive and competent technical assistance.

We believe this policy will inevitably contribute to the growth and profit of Pittsburgh Chemical Company's customers.

PITTSBURGH COKE & CHEMICAL CO.
GRANT BUILDING • PITTSBURGH 19, PA.
Subsidiaries and Divisions
PITTSBURGH CHEMICAL COMPANY • GREEN BAG CEMENT COMPANY
UNITED STATES CONCRETE PIPE COMPANY • COKE & IRON DIVISION

DEPT/International

Nine Oil Firms Will Have to Relinquish



Companies that didn't get in on Libya's oil bonanza may get a second chance. They may be able to pick up some acreage near that country's choicest oil finds beginning next November.

Another possibility is that companies now active there will get an opportunity to look over acreage now held by competitors.

The reason: Many concession areas will soon have to be reduced by one-quarter under Libya's relinquishment requirements. The ceded sections will be returned to the Libyan government.

The Libyan Petroleum Commission has not yet indicated whether it will reoffer the relinquished tracts. But oil company officials believe it will.

With Libya the hottest of the world's new oil lands, it seems likely that relinquished areas will be snapped up quickly if and when re-offered. No company is going to give up an area it thinks is potentially productive. But, as one oil man said recently, "There's always a chance the fellow who gave up an area missed something good."

Oil men cite the experience of Lake Maracaibo, Venezuela. New concessionaires found some of that country's best fields in relinquished tracts that were reoffered in 1956 and 1957.

Some 45% of existing Libyan concessions must be reduced between next November and May, 1961. Blocks held by nine companies are affected (map).

After May there are no more relinquishment deadlines until December, 1961, when a new series comes up.

Under the oil law, a company must reduce each of its holdings to 75% of its original size within five years of the concession date.

No block need be reduced below 3,000 square kilometers (1,158 sq. mi.), and those originally under that size are not affected.

Concessionaires may freely choose the portions they will return to the government.

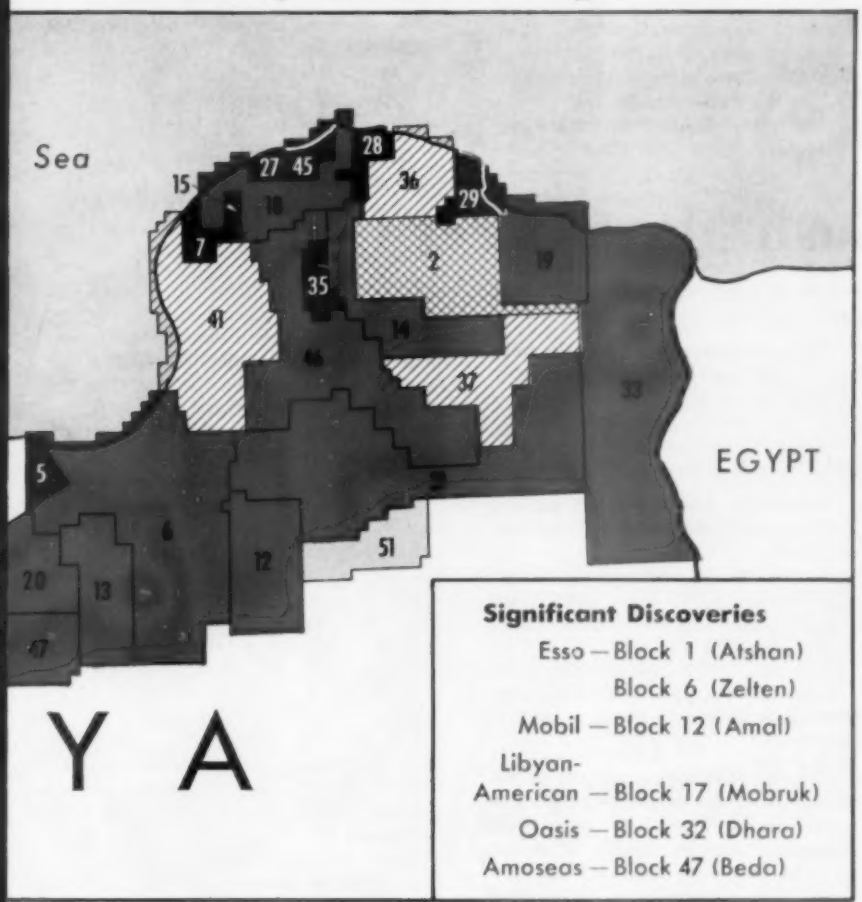
Two blocks will have to be reduced in November, 25 in December, 7 in January, 1961, and 4 in May, 1961. Thus, 38 of the total of 84 blocks in Libya are affected in this period.

Concessions on which significant oil strikes have been made, including Esso's Block 6, site of the prolific Zelten wells, are among those to be reduced in the near future.

In each case, however, the concession is large enough so that relinquishment will not cut into a proved oil field.

Esso's Block 6, which must be reduced next December, measures 25,690 sq. km. (9,113 sq. mi.), for

Some Libyan Acreage Soon



instance. Exploration has failed to find production in the northern portion, where several tests have resulted in dry holes.

Five other blocks on which interesting oil discoveries have been made will also have to be reduced within the next 13 months:

• **Esso's Block 1,** site of the Atshan oil discovery and several gas wells, is subject to reduction in November.

• **Oasis' Oil's Block 32,** where oil has been found in the Bahi and Dhara wildcats, must be reduced during December. Oasis is operator for the Conorada Group composed of Continental, Ohio Oil, and Amerada.

• **Libyan-American's Block 17,** site of the Mobruk discovery, is another up for division in December. Libyan-American is owned jointly by W. R. Grace & Co. and Texas-Gulf Producing Co.

• **Mobil's Block 12,** on which the Amal find is located, faces a December relinquishment deadline.

• **American Overseas' Block 47,** where oil was found in the Beda wildcat, is another block scheduled for division in December. Amoseas is owned by the Caltex parent companies.

Other companies holding blocks to be affected by the law by May, 1961, are Nelson Bunker Hunt, Compagnie Francaise des Petroles, British Petroleum, and Shell.

As the deadline nears, companies are pushing up their exploration and wildcat drilling. Here's what companies are doing now;

Esso has three seismic crews at work on its Block 6. It is drilling a deep wildcat, No. 1 Et Tual, in the northern part of the block, and No. 1 Zarghut southeast of Zelten.

British Petroleum is conducting offshore seismic studies on its Mediterranean Blocks 34 and 36, each scheduled for reduction next January. The company is drilling wildcats on its Blocks 35 and 37, also facing a January deadline.

Oasis, the most active searcher in Libya, has 11 rigs and an equal number of seismic crews at work throughout its concessions 25, 26, and 30 through 33. They must all be sliced up during December.

Mobil has three seismic crews and three rigs operating in Libya at the present time. Its Blocks 9-15 must be reduced in December and its Block 50 next May.

Shell, which holds Blocks 38-41, also reports three rigs and three seismic crews active. Relinquishment deadlines fall in January.

Amoseas is drilling three wildcats, two on Block 47, and the third on Block 42. All are up for division during December.

Nelson Bunker Hunt is drilling a wildcat in Block 2, which bears a November relinquishment date.

Libyan-American has, at last report, two wildcats drilling in Blocks 17 and 20, both to be affected in December. Esso has been designated operator in the two blocks under a farmout agreement.

CFP has two wildcats on its Blocks 23 and 24, up for division in December.

Some oil men point out that the Libyan relinquishment provisions, designed to speed up oil development, paradoxically, have had a tendency to slow down development of the best fields.

The theory behind relinquishment provisions is that companies, faced with relinquishment deadline will speed up their exploration to make sure they do not give back any valuable rights.

Thus, it is reasoned, oil development is also speeded up.

There are two reasons why the opposite often is true.

First, relinquishment deadlines encourage exploration and wildcatting at the expense of development drilling around oil finds. This has been generally true of Libya.

Second, an oil company faced with relinquishment will not return the most promising areas—big anticlines, for instance—where it has the best chance of finding oil in commercial quantities.

The relinquishment provisions, in effect, have virtually put a premium on the drilling of dry holes. For some companies, the accent has been on determining areas that are not pro-

ductive rather than areas that are. In effect, they are seeking to determine by a multimillion-dollar process of elimination which sections they want to give up.

An alternative to this plan of exploration is to send in a large number of exploration teams and drilling crews, to assure as complete coverage as possible of the concession acreage within the allotted time.

Such a procedure, however, is very expensive.

Relinquishment dates often also cause uneconomical operations by forcing premature drilling.

In order to explore their concessions in the shortest possible time, some companies have drilled wildcats before accumulating and digesting sufficient geological data.

More time to study an area would have shown that some drilling sites, where hundreds of thousands or even millions of dollars have been spent, were bad risks from the start.

In Libya, where concessions range up to 23,300 sq. mi., the problems of exploratory work and test drilling have been particularly acute. The desolateness of the Libyan interior, and the accompanying transportation difficulties, have added to these problems.

ENI's Price Slash May Affect Crude

MILAN—Lower prices for crude imported into Italy could follow the gasoline price cuts made recently by the state-owned ENI group, according to Italian oil circles.

Competition, they figure, will force other importer-refiners to cut prices of their crude—since they have already had to meet ENI's cuts in gasoline prices.

They expect the price cut will also induce the Italian government to reduce the heavy taxes that hold down sales of oil products, particularly gasoline. Taxes, for example, account for 55.4¢ of the new 73¢-per-gallon price of regular gasoline.

Purchase of cheaper crude from Eastern Europe, and particularly the Soviet Union, was the main reason ENI's Agip gave for slashing gasoline prices 3¢.

Last year ENI imported 1.6-million tons of Soviet crude at an average price of $12.42 per ton.

Agip, ENI's marketing company, instituted its 3¢-a-gallon cut in late March on premium, regular, and motorcycle-motorscooter grades of gasoline. Two days later, independents and majors alike—Esso, Shell, and Mobil Oil—reduced their prices for these products by the same amount.

The cuts range from 12% to 15% on the prices without tax and will result in an annual saving of $25-million for Italian consumers, it was said.

Agip supplies about 25% of Italy's gasoline market from the two refineries it owns jointly with Esso and the one plant it owns jointly with British Petroleum.

The industry is speculating on how far the price-cutting will be carried, now that the ENI group has set up a new marketing company in Germany.

This is another highly competitive —and booming—market that has already had its price wars, partly because of the availability of low-cost products from Italy as well as from Eastern Europe.

The new Agip AG plans to build its own network of service stations in Germany—in the same luxury style that has earned them the name of "Mattei Cathedrals" in Italy, after ENI president Enrico Mattei.

Eventually, it also plans to acquire independent companies with existing outlets.

According to Agip director Pietro Papi, Agip AG will also "prepare the German, especially the south German, market for ENI oil products." In Germany, this announcement was regarded as an indication that ENI aims to sell heating fuel there, as well as gasoline.

The new German company is the latest to shape up in plans of ENI chief Enrico Mattei to break into European markets outside of Italy.

Late last year, ENI set up new marketing subsidiaries in Switzerland and Austria, where it immediately began building sales outlets—and starting publicity campaigns.

Meanwhile, some progress is reported on plans for the Swiss refinery at Aigle and ENI's Genoa-Aigle-Munich crude oil line. Both projects are still tied in with ENI's marketing plans, even though there has been a switch in financing arrangements.

Site preparation is under way for the 40,000 b/d refinery. Construction of tankage will begin this summer. The plant itself will be started next year.

The plant is to be built by Soc. des Raffineries du Rhone S.A., a new refining company now entirely owned by the Geneva-based Soc. Financiere Italo-Suisse.

ENI originally held a ⅓ interest in the refining company, which it recently gave up to Italo-Suisse. The latter, in turn, gave up to ENI its original ⅓ interest in Oleodotti Internazionali, the new ENI affiliate set up to build the pipeline from Genoa to Aigle.

The transfer of interests is said to have been made for "practical reasons" not affecting the projected collaboration of the two companies.

Meanwhile, the exact status of Mattei's plan to extend the pipeline from Aigle to Munich under a joint venture with a group of Bavarian banks still remains unclear—partly because the Swiss have not yet approved the extension proposal (PW—Mar.18'60,p79). Nonetheless, progress "on schedule" was reported last week by Suedpetrol AG, the Italian-German company set up in Munich to build the stretch into Germany.

India's Oil Invitation Draws Five

NEW DELHI—Five oil companies —from the U.S., Britain, Italy, and Japan—are now getting down to negotiations with New Delhi on terms for new oil rights under India's revised oil rules.

Two U.S. companies wound up among those meeting India's Mar. 31 deadline for indications of interest. One is Standard-Vacuum, the only U.S. company with present exploration rights.

The other is Caltex, which refines and markets here. The others: Italy's state-owned ENI, a Japanese company, and Shell.

While terms remain to be negotiated, a 60-40 profit split is favored by the government—"along the lines of the formula in Venezuela." At least, that is current thinking of India's Oil Ministry. It emphasizes, however, that its approach to the question is not "rigid."

Big Latin Oil Parley Fizzles Out

(A report from PETROLEUM WEEK*'s Mexico City Bureau Chief)*

MEXICO CITY—What was billed as a big Latin American government oil parley has turned into a disappointing flop for Pemex, Mexico's nationalized oil entity (PW—Apr.8 '60,p78).

The idea for an international meeting of the chiefs of Latin American government oil companies was advanced by Pemex chief Pascual Gutierrez Roldan on a trip around South America with Mexican president Adolfo Lopez Mateos.

In principle, almost all the top brass of various South American government oil companies had agreed to attend a big meeting in Mexico, while in the heady atmosphere of good neighborliness and backslapping "abrazos" of the Mexican officials' visit.

But when the time for the meeting arrived last week, "pardons, excuses, and regrets" were sent to Pemex that the big bosses were tied up and could only send secondary officers.

Even those were to come at separate times, and not for one big meeting together. Bolivia, however, didn't even respond to the invitation.

The top-billed name attraction was to have been Dr. Juan Perez Alfonzo, Venezuela's Minister of Mines & Hydrocarbons, but he didn't turn up.

At the time originally scheduled for the parley, only two delegates had arrived, from Venezuela and Peru. The Venezuelan was Dr. Eduardo Acosta Hermoso, Director of Hydrocarbons in the Ministry of Mines & Hydrocarbons. The Peruvian was David Torres Vargas, of Peru's Industria Petrolera, who kept repeating "This is a very informal meeting—we are not even official representatives of our government."

Sources close to Pemex president Gutierrez say he was so disappointed by the outcome that he didn't even accompany the two delegates on visits to Pemex installations. Originally, he had planned to escort all delegates personally around Pemex installations in his own plane, winding up with a big press conference.

The impression here in Mexico City is that Latin American governments are too preoccupied with their own problems at home to be ready for the broad kind of oil cooperation the Mexicans proposed.

There is also the impression here that they were just a little apprehensive that the parley might be construed as a move toward oil nationalization by Latin American governments.

This impression is confirmed by statements of the two delegates, who went out of their way to deny energetically that this "very informal" meeting would in any way harm private oil company ventures in Latin America. They claimed that although they respect Pemex, their own governments do not handle the oil situation in the same way and work well with private companies in their own territories.

There are several reasons why Pemex felt it desirable to call the parley.

Pemex officials make these points:

- Big private oil companies can shift technical personnel within their own companies. But government companies in Latin America are too small to do the same. Hence an interchange of technicians and technical information should be set up among them.
- Pemex is worried over prospects of willy-nilly duplication of output of petrochemicals, with each country building its own petrochemical industry without real markets. It proposes working out agreements on who will produce which products and where. For example: Mexico—which has synthetic rubber plans under way—would like to convince Venezuela that it would be uneconomical for that country to produce it also, and that Venezuela could produce another product instead. The Venezuelans apparently want to go ahead anyway.
- Mexico wants to iron out trade in basic commodities—oil, steel, and coal—in the new free-trade grouping arising out of recent meetings in Montevideo. The oil parley was to have been the first step.

Italian Firm Wins Libya Grant

MILAN—A private firm, Soc. Ausonia Mineraria, has been granted the second Libyan oil concession given an Italian company.

Ausonia, exploration subsidiary of Italy's Edison industrial group, was awarded Concession 85 in the northeast section of the Fezzan.

Late last year, Italy's state-owned ENI group won a concession in Zone 2 (PW—Dec.4'59,p50).

The new Ausonia block, in Zone 4, covers 11,745 sq. mi. and lies about 185 mi. south of the coast. It adjoins Mobil Oil's Block 72 and Pan American Petroleum's Block 74.

The new concession is approximately 100 mi. southwest of Esso's big Zelten discovery.

In keeping with recent practice in Libya, the Italian firm's offer was more liberal than the petroleum law calls for.

Ausonia agreed to pay the government 17% royalty, instead of the minimum 12½%, on production up to 15,000 b/d.

The company also renounced the 25% depletion allowance provided by law and agreed to spud its first wildcat within 18 months.

Unlike ENI, however, Ausonia did not give the Libyan government an option to participate in the operation. ENI's agreement allows the government to take a 30% interest.

Ausonia was also granted an option to build a petrochemical plant if crude production reaches 50,000 b/d.

Five other oil companies, including three American majors, are seeking acreage in the same area.

Ausonia's grant apparently includes some acreage sought by Shell, but not the others.

Other firms interested in the general area are Phillips Petroleum, making its first appearance in the Libyan land play, Gulf Oil, Mobil Oil, and Elwerath, a German company.

New Persian Gulf Field to be Opened

ABU DHABI—The Persian Gulf offshore discovery near Das Island will be put into commercial production under a two-year program now started by Abu Dhabi Marine Areas Ltd., (owned ⅔ by British Petroleum, ⅓ by Cie. Francaise des Petroles).

A 20-mi. submarine pipeline will be built to Das Island, where gas/oil separators will be installed along with storage tanks and a tanker loading jetty.

The development plans were announced last week by BP. No. 3 Umm Shaif, which was tested at 5,000 b/d, has confirmed the promise of the initial discovery in 1958 (PW—Jan.29 '60,p35), and No. 4 is being drilled.

What's New / AROUND THE WORLD

IVORY COAST—Plymouth Oil Co. is terminating its 39% interest in exploration in this section of French West Africa after two disappointing wildcats.

Plymouth was associated with Soc. Africaine des Petroles. Under the termination pact, the French firm will continue exploration for three years, with Plymouth carrying an override in any production to the extent of Plymouth's investment.

•

INDONESIA—Japan will get 40% of the increased oil production of former Shell fields in North Sumatra for 10 years—in return for a $50-million credit that will finance development of the properties by Indonesia's state-owned Permina.

Under a pact formally signed last week after two years of negotiations, Permina will get Japanese pipe and other equipment, plus technicians from Japan's semi-governmental Oil Resources Development Co. Permina thus hopes to boost output from a present 16,000 b/d to 50,000 b/d within four years.

•

SPAIN—A bid to build a 24,000 b/d refinery at Vigo with 60% foreign capital was turned down by the government last week. It was filed by Petroleos de Galicia, headed by former Navy Minister Salvador Moreno Fernandez.

•

AUSTRALIA—British Petroleum, like Caltex, plans to build a lube oil plant in Australia (PW—Apr.8'60, p80). It will cost between $17.9-million and $22.4-million, with capacity of 100,000 long tons annually.

•

EGYPT—Zoning of the Western Desert—now open to international bids for new oil rights—is completed. A 115,800-sq.-mi. stretch from the Libya border to the Nile Valley is said to have been divided into zones varying from 8,878 sq. mi. to 15,440 sq. mi.

•

ETHIOPIA—Ethiopia's first refinery—a $12.5-million plant—will be financed and built by the Russians at the port of Assab in Eritrea, which is federated with Ethiopia. This is part of a new pact, under the $100-million economic aid agreement signed in Moscow last year. The Russians also are to carry out exploration for mineral resources in Ethiopia's western provinces.

•

SYRIA—Cairo's General Petroleum Authority is now expected to call for international tenders to develop northeast Syria's Karatchok field and to build a pipeline to the Mediterranean, the Cairo daily "El Ahram" reports. The field was taken over from the Menhall-Atlantic group.

•

SPAIN—The government's National Institute of Industry (INI) has been allotted $12.5-million for oil investment during 1960.

Of this, $7.7-million will be for exploration, and the rest for refining and lubricating facilities.

•

EGYPT—A Yugoslav company is scheduled to start oil exploration in Egypt by the end of May—in behalf of the General Petroleum Authority. According to the Cairo press, the Yugoslavs will begin work 30 mi. south of the Ras Gharib field on the Red Sea coast under a recently signed long-term contract.

•

JAPAN—Idemitsu Kosan, aggressive independent with expansion aims, says it plans to build two new refineries within the "next few years" in the Tokyo and Osaka or Nagoya areas. The firm, which now owns a 100,000 b/d refinery at Toyama, recently signed a six-year contract with the Russians for 6-million to 8-million tons of crude (PW—Apr.1'60, p6). It is also negotiating for increased deliveries under its long-term contract with Gulf Oil.

•

GREECE—While Esso still awaits parliament's approval of its new oil exploration pact, the Greek government also plans an exploration program of its own—with Rumanian technicians and equipment.

The Ministry of Industry has already granted one contract to the Rumanians to explore the Grevena-Karditsa area of central Greece. The Esso agreement, a 50-50 profit-sharing pact, covers areas of southwestern Greece (PW—Dec.18'59,p57).

•

VENEZUELA—A unit operating agreement has been signed by San Jacinto, a "newcomer" to Lake Maracaibo, and Venezuela's "Big Three"—Creole, Shell, and Mene Grande—for the Lower Lagunillas Reservoir of the Southwest Bachaquero area. The Ministry of Mines & Hydrocarbons estimates its crude reserves at 600-million bbl. Its output averaged 202,000 b/d last December.

•

NEW ZEALAND—The Russians are now trying to sell oil in New Zealand. They found no buyers in Australia for crude and diesel fuel.

•

Venezuela Weighs Exploration Prop

CARACAS—**Oil Minister Dr. Juan Perez Alfonzo reaffirmed last week that Venezuela is studying selective tax allowances**—specifically to stimulate oil exploration, with the aim of increasing oil reserves. Allowances on reinvested profits would not apply to normal production activities, he said.

Wildcats in the News

JORDAN—Phillips Petroleum will spud its next wildcat north of the Dead Sea within the next month. The company recently increased its holdings to 8.1-million acres. Thus far, it has spent $7-million on exploration in Jordan without finding oil.

COLOMBIA—Cities Service will drill its next wildcat by June at Capote, about 19 mi. southwest of the La Cirra-Infantas field. So far, it has found only marginal production in several wells drilled on the 2.2-million-acre Carare concession under a joint venture with Richfield and the Colombian government's Ecopetrol.

GULF PRESS CONFERENCE **9**

A service of Gulf Oil Corporation in the cause of creating—through the facts as we see them—a fuller understanding of the oil industry.

Size for whose sake?

Big Business, some will answer quickly, serves only itself. Its aims, as they see it, are fewer and fewer competitors, fatter and fatter profits. They ignore the fact that much of today's business is big simply because it *has* to be big to supply our needs. Let's look at a few facts on business that are all too often overlooked.

Q. These days, exactly how big is the job Oil must do?

A. Let's express it in production figures. These, of course, only hint at our huge consumer appetite for oil. The industry refined 2,789,404,000 barrels of crude oil in 1958. That's more than 7,642,000 barrels a day. We also drilled 47,758 new wells. Doing so helped add 235,512,000 barrels to our proven reserves underground. That's one more assurance we have of continuing to meet our oil needs tomorrow.

Q. In doing this job, don't a few big companies dominate the rest of the industry?

A. Not at all. The industry includes some 12,000 individual oil producers and 28,000 individual marketers. And there are 291 operating refineries in the U. S. owned by 186 different companies. No one or two or ten of these companies monopolize the business.

Q. How is the volume of business spread among these refiners?

A. In 1958, the largest refiner had 10.3% of all refinery production. The top five refiners together had 37.9% of this "run." The top ten had less than 61%. Refining is big business—but it doesn't rule out healthy competition.

Q. But why must refining companies be big business in the first place?

A. A few statistics may help answer that one. Today's standard 50,000-barrel-a-day refinery costs about $75-80 million. And while the outlay for capital equipment for all U.S. industry runs to $17,900 for each production worker, it comes to $77,700 for the refining industry. A small business could hardly afford that.

Q. Up to now we've talked a lot about refining. What of exploration?

A. Our driller today spends $13.80 to drill just a single foot. And, on an average, he must go down 4,160 feet to find oil—if he finds it at all. A "dry" hole cost $2,000 in 1859 when the U. S. oil industry was born. Today it can run up to $3 million. Yet, drilling costs are only part of the picture. Companies now searching for oil in offshore waters, just as an example, operate the biggest helicopter service in the world.

Q. Then there is little room for the "loner" in the oil industry.

A. As far as risky foreign operation and costly offshore exploration go this is probably true. But onshore, here at home, not true. Take drilling. The small "independents" were able to provide three of eight barrels of oil the U.S. produced. Also, most of the country's 574,900 oil wells are small producers, averaging 11.7 barrels a day. So, there is a special need for these "independents." But their oil must be transported by pipeline and often by tanker, too, to its refinery destination. This again is big business.

Q. Do we need bigness at the selling end of the business too?

A. No, as we already said, there are 28,000 marketers in the oil industry. And there are about 200,000 primary service stations selling oil products to the public. About 90% of these stations are owned by small independent businessmen.

Q. You suggested before that bigness helped here at the gas pump. How?

A. It has helped raise the quality of oil products while holding down the cost to the public. For example, to raise gasoline octane by just one number to meet the needs of today's high compression automobile engines costs the industry some $200 million. And oil has kept up with the costly race to boost quality without an appreciable rise in prices.

Q. Can you cite some figures on price holding?

A. Gasoline prices, excluding Federal and State taxes, averaged 20.27¢ a gallon in 1949, against 21.09¢ in 1959. That's a rise of less than a penny a gallon in over ten years. Of course, gasoline taxes jumped from 6.52¢ to 10.12¢ in the same period. The whole range of oil product prices has risen far less than the U. S. index of retail commodity prices.

Q. Even so, aren't oil industry profits way above other industries?

A. Hardly. The stiff competition, the risks of exploration, and the rising costs we spoke of all help keep oil profits down. The industry's net income after taxes in 1958 was 10.2% of net worth, against 9.8% for all manufacturing. Bigness does *not* mean exorbitant profits.

Q. If bigness hasn't meant exorbitant prices or profits, hasn't it given the oil industry undue power in our government?

A. If anything, it's the other way around. The criticism that bigness has to be "badness" dogs the oil industry in devious ways. The industry, for example, has been called on the carpet by one branch of government for doing what another branch has asked. But, often the public only remembers the headlines of the charge, even though no basis for it existed. Again and again, big business is hurt by lack of knowledge about it. The best defense for bigness is helping people understand it.

We welcome further questions and comment. Please address them to Gulf Oil Corp., Room 1300, Gulf Bldg., Pittsburgh 30, Pa.

DEPT/Service & Equipment Companies

ALEXANDER KIDD has been elected president of Girdler Construction Corp., Louisville, Ky. Kidd was formerly vice-president of Stewart-Warner Corp., Chicago, and before that was vice-president of M. W. Kellogg Co., New York. He succeeds **W. Roberts Wood**, who has resigned to devote full time to his duties as vice-president of Chemetron Corp., Chicago. Wood has been president of Girdler Construction Corp. since it was formed last October as a subsidiary of Chemical & Industrial Corp., Cincinnati, to take over the operations of Chemetron's Girdler Construction division.

A. Kidd

R. H. Elkins

DR. ROBERT H. ELKINS has joined Nalco Chemical Co., Chicago, as manager of corporate research. Elkins will be responsible for corporate research projects, and will assist in projects aimed at developing new products and processes. He was most recently associate director of Borg-Warner Corp.'s research center, where he has also been manager of organic and polymer chemistry. He has been a research chemist for Standard Oil Co. (Ohio), Great Lakes Carbon Co., and Sinclair Research Laboratories, Inc.

R. G. MILLER has been appointed assistant to the president of BJ Service, Inc., Long Beach (Calif.) subsidiary of Borg-Warner Corp., responsible for special assignments. Miller was formerly vice-president and assistant general manager. He came to BJ Service from Chemical Process Co. when it consolidated with BJ in 1956.

HAROLD C. JOHNSON has been named vice-president in charge of manufacturing operations for Cooper-Bessemer of Canada, Ltd., at Stratford, Ont. Johnson was also named vice-president of the parent Cooper-Bessemer Corp. He was formerly manager of manufacturing for the parent company's main plants at Mt. Vernon, Ohio, and Grove City, Pa. At the same time, **C. W. Gilchrist** was appointed plant manager of the Canadian company's new manufacturing facilities at Stratford. Gilchrist was formerly assistant works manager at the Mt. Vernon plant.

R. W. ROGERS is sales representative in the Kansas territory for Bradford Motors Works, with offices at Lyons, Kan. Rogers formerly represented National Supply Co. and Jones & Laughlin Supply Division in Kansas and Oklahoma.

HAROLD GRANT has been named regional training supervisor for Halliburton Oil Well Cementing Co.'s southern region, which includes its Corpus Christi, Houston, New Orleans, and Shreveport divisions. Grant replaces **D. J. Sargent**, who is now assistant division manager of Halliburton's New Orleans division.

H. Grant

H. Parsons

HAROLD PARSONS is manager of Western Co.'s new Rocky Mountain division, with offices in Farmington, N. M. He was formerly assistant Oklahoma City division manager. At same time, **William H. Dennis** was named district manager of the new Farmington district. Previously, Western had only sales representation at Farmington, and maintained a district at Cortez, Colo. The Cortez office, where Dennis was formerly located as district manager, will continue to be maintained.

GEORGE W. HENDERSON becomes manager of the new Houston branch office of Delta Tank & Mfg. Co.'s oilfield equipment division. Henderson, who joined Delta in January, has been engaged in sales activities for petroleum equipment manufacturers for the past seven years.

G. W. Henderson

W. H. Newman

W. H. (Bill) NEWMAN has joined the fishing tool division of Wilson Supply Co. as sales supervisor. He will be located in Houston, but will be working with all Wilson fishing tool branches. He was formerly division drilling superintendent for Magnolia Petroleum Co., at Houston.

JOE BOB GALE has joined Milwhite Mud Sales Co. as sales representative for the Tulsa area. He was formerly associated with Fleet Drilling Co.

BYRON MARQUIS is the new president of Singmaster & Breyer, Inc., New York, processing engineering company for the metallurgical, chemical, and nuclear industries, and an affiliate of The Fluor Corp., Ltd. Marquis was formerly vice-president of engineering. **Frank G. Breyer**, formerly chairman of the company, becomes chairman of the advisory committee, and **William H. Finkeldey** moves up from president to chairman.

C. S. HIGHTOWER is the new field engineer in the Gulf Coast area for Tex-Tube, Inc., with offices in Houston. In his new position, Hightower will specialize in line pipe, pipeline design and engineering, and oil well tubing and completion methods.

C. S. Hightower

F. L. Waller

F. L. WALLER becomes district sales representative for the Baash-Ross Division of Joy Mfg. Co., at Houston. Waller, with the division since 1945, was formerly operations manager at the Odessa plant.

J. O. WINSTON, JR., has been elected a director of Reed Roller Bit Co., Houston. Winston is associated with the investment banking firm of Rowles Winston & Co., Houston. He is also a director of Freeport Sulphur Co., North Central Oil Co., and Brewster-Bartle Drilling Co.

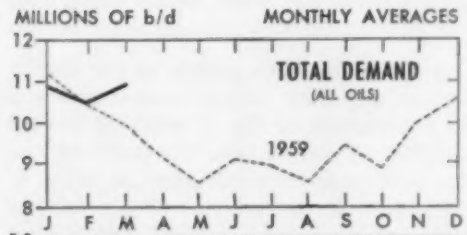
RALPH L. GRAY, chairman of Armco Steel Corp., Kansas City, Mo., has been elected a director of Spencer Chemical Co., also in Kansas City. He fills a vacancy created by the death of **Kenneth A. Spencer**, chairman and founder of the chemical company. **John C. Denton**, Spencer president, was named chief executive officer, and **C. Y. Thomas**, former vice-chairman, was elected chairman.

WILLIAM H. (Bill) COTTLE is manager of the newly created mechanical tube and special products division of Tex-Tube, Inc., Houston, and **Robert (Bob) Gajeske, Jr.**, is inside sales supervisor of that division. Cottle, who joined Tex-Tube in 1958, has also been production manager of a farm implement manufacturer, and manager of steel sales for Vinson Steel & Aluminum Co. Gajeske joined the company five years ago in the general sales department.

DON KYLE has joined W. C. Norris, Manufacturer, as sales representative assigned to the West Texas sales division, with offices in Hobbs, N. M. He was formerly associated with the Oil Well Supply Division of U. S. Steel Corp., at Gainesville, Tex.

PETROLEUM WEEK'S

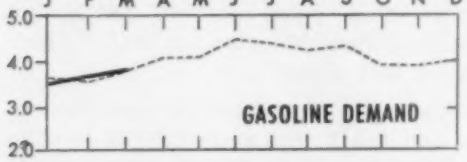
Fingertip Figures



Figures for period ended April 8, except as noted

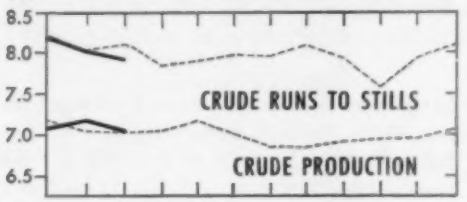
TOTAL DEMAND

Latest 4-week average	10.699
Year ago	9.683



DISTILLATE DEMAND

Latest 4-week average	3.986
Year ago	4.017

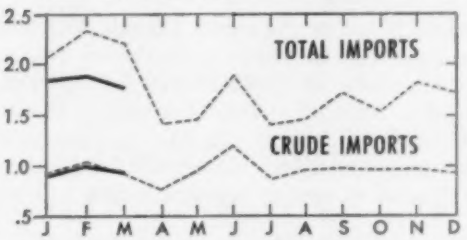


RUNS TO STILLS

Latest week	8.035
Previous week	7.916
Year ago	8.092

CRUDE PRODUCTION

Latest week	7.028
Previous week	7.151
Year ago	7.127

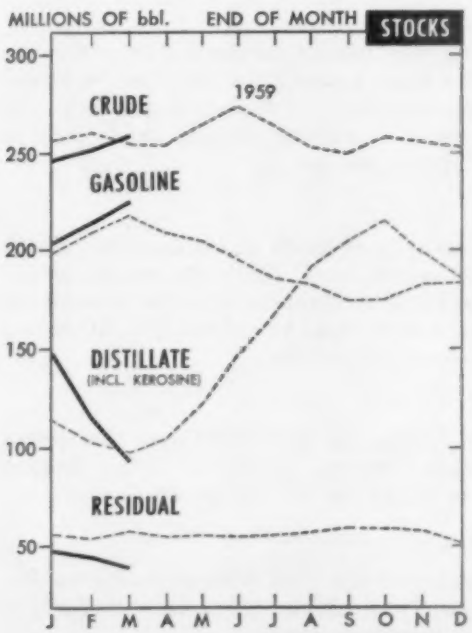


TOTAL IMPORTS

Latest week	1.670
Previous week	1.939
Year ago	1.406

CRUDE IMPORTS

Latest week	.752
Previous week	.967
Year ago	.855



CRUDE STOCKS

Week ended 4-2	258.2
Previous week	257.6
Year ago	252.4

GASOLINE

Latest week	225.0
Previous week	225.6
Year ago	214.6

DISTILLATES

Latest week	92.6
Previous week	92.7
Year ago	98.3

RESIDUAL

Latest week	39.4
Previous week	39.1
Year ago	57.4

Gasoline demand didn't quite measure up to expectations during the first quarter, but the "loss" could be made up later.

The same weather conditions that did so much to improve the bleak distillates picture of the first two months was the probable reason for this, according to John Winger, vice-president and petroleum economist of the Chase Manhattan Bank.

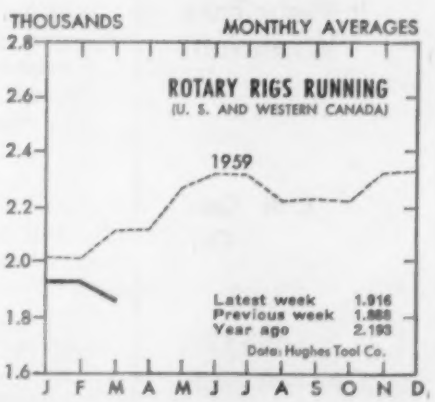
He attributes the gasoline weakness in part to the heavy snowfall and flood conditions that slowed agricultural activity in some areas—and the farm market is a good-size market for gasoline.

The motor fuel outlook could improve greatly from here on in, however, as a result of the recent upsurge in automobile sales.

"If the heavy sales rate is sustained in the second quarter, gasoline demand should improve," Winger notes. "The appeal of a new car leads to more driving—and greater gasoline consumption."

Demand for motor fuel in the past four weeks has averaged 32,000 b/d under a year ago, but it shows signs of firming up.

The increased demand has brought about a moderate improvement in gasoline stocks, but they are still high compared with 1959. Stocks last week were 225-million bbl., down 600,000 bbl. from the previous week. However, they are 10.4-million bbl. higher than a year ago.



The Market Trend

Residual Fuel: Supply Ins and Outs

Ever hear of marketers pushing customers towards competitors? That's the way things shaped up for a while last week on the heavy fuel supply dilemma.

The idea behind rack price advances by some sellers in the highly sensitive Brooklyn, N. Y. area—often described as the sounding board for pricing trends—was to create a diversion of No. 6 business toward other sellers to ease tight supplies. But in many cases, the business was turned away by No. 6 sellers, who held back price advances in order to "protect" their yard buyers on locked-in retail contracts. One marketer said he wouldn't load trucks that weren't a "house account." Another cut off a customer who took 10% more No. 6 than his contract called for. Finally, customer pressure brought prices back down.

The abortive advance could have signaled the end of locked-in contracts employing very low bases. You didn't need a crystal ball to come away with the feeling that because of locked-in contracts, prices at one supply level could not move higher unless other prices at supply echelons also moved up.

Even though import quotas have been increased, heavy fuel supplies will be tight throughout the balance of the current importing period. Importers will guard their supplies jealously from here on in and will be less inclined to backstop distributors in quoting low prices.

A meteoric rise in bunker prices is not in the cards, though. For one thing, coal is still the industry's main foe. Sources say that coal people would like to see No. 6 cargo prices move up to $2.25 per bbl. at New York harbor to ease their pain a little. Another reason that bunker prices won't skyrocket is the abundant supply of foreign oil. As long as ticket holders can play one foreign seller against another, product will land in the U. S. at cheap prices and this will tend to temper upward moves.

Distillate Boost Fails: Strong March demand went a long way toward putting a floor under the tottering distillate market. In the East, sub-rosa discounts were trimmed and many suppliers found themselves short of product. Suppliers in the Midwest tried to go a step further by raising terminal prices 0.25¢ a gal. but the move collapsed—"spring has sprung."

It Might Take Witchcraft: Look for a fairly tight gasoline market this spring and summer if refinery runs stay below or at the 8-million-bbl. level. That's the magic number some astute industry men hope for after throwing all sorts of statistics into the cauldron. Nevertheless, it would take an extremely tight market to clean up the many price wars in the nation.

L. A. 'Gas' Off: Gasoline prices don't appear too healthy on the West Coast. Low-priced Gulf material is being blamed again for the latest slide in Los Angeles rack prices, which have sunk to 10.75¢ per gal. for low-grade regular.

Lube Oils Get Advance: Lubricating oil prices pointed higher at the Gulf when a large manufacturer posted a 1¢-a-gal. advance. Trade comment was that the increase was long in coming as supplies have been snug.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of April 11

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U.S. Gulf Coast, cargoes
- Gasoline, 98 oct prem 11.75-12.75
- Gasoline, 92 oct reg 10.75-11.5
- Kerosine 9-10
- Heating oil, No. 2 8-9
- Gas oil, 48-52 d.i. 8.25-8.875
- **Fuel oil, bunker "C" ..... $2.10-2.25↑**

Caribbean, cargoes
- Avgas, Grade 100/130 ..... 14.75
- Gasoline, 93 oct research prem 11
- Gasoline, 87 oct research reg 10.125
- Gasoline, 79 oct research 9.375
- Gasoline, 70-72 oct motor method 9.25
- Kerosine 9.25
- Heating oil, No. 2 8
- Gas oil, 48-52 d.i. 8.25
- Fuel oil, bunker "C" $2.00

New York Harbor, barges
- Kerosine 9.8-10.3
- Heating oil, No. 2 ..... 8.8-9.3
- Fuel oil, No. 6 ..... $2.47

Okla.-Group 3, northern shpt., bulk
- Gasoline, 91 oct reg 11.5-12.25
- **Kerosine ..... 9.125↓-9.625↓**
- **Heating oil, No. 2 ..... 8-8.25↓**
- Fuel oil, No. 6 ..... $1.50-1.70

Chicago, bulk
- **Gasoline, 91 oct reg ..... 11.5↑**
- Heating oil, No. 2 ..... 8.75-10.35
- Fuel oil, No. 6 high sulfur 7.15

Los Angeles, rack
- **Gasoline, 88 oct reg ..... 11.25↓-12.65**
- Diesel fuel, PS 200 ..... 7.75-11.25
- Light fuel, PS 300 ..... $2.80
- Heavy fuel, PS 400 ..... $2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3 ..... 4.5
- FOB Breckenridge, Tex. 4

LP-Gas
- Propane, Oklahoma (Group 3) 4.5-5
- Propane, Baton Rouge 5.625-5.875

Pennsylvania Lubes
- Bright stock, 25 p.t. 23
- 200 vis. neutral, 25 p.t. 27

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i. 25-26
- Neutral, solvent, 200-210 vis 21.5-22.5

Gulf Coast Lubes
- **Bright stock, solvent, 95 v.i. ..... 25-26↑**
- **Neutral, solvent, 200 vis. ..... 21.5-22.5↑**

Eastern Hemisphere

Singapore (Pulau Bukom) cargoes
- Avgas, grade 100/300 ..... 15.875
- Gasoline, 79 oct research 9.75
- Kerosine 10.125
- Gas oil, 48 d.i. minimum 9.5

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, (Okla.-Kan.), 36.0-36.9 ..... $2.62-2.97
- North Dakota, 36.0-36.9 ..... 2.47-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9 ..... 3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9 ..... 2.92-3.22
  - West Texas, sweet, 36.0-36.9 ..... 3.00
  - West Texas, N.M., inter., 36.0-36.9 ..... 2.93
  - West Texas, N.M., sour, 32.0-32.9 ..... 2.71
  - East Texas, flat 3.05-3.25
  - Mirando, 28.0-28.9 ..... 3.31
- Illinois Basin, flat 3.00
- Pennsylvania Grade, Bradford dist., flat 4.55
- California, Signal Hill, 21.0-21.9 ..... 2.32†
- North Louisiana-Arkansas, 36.0-36.9 ..... 2.77-3.02
- Wyoming, sweet, 36.0-36.9 ..... 2.85-2.90
- Wyoming, sour, 32.0-32.9 ..... 2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.) $2.38
- Leduc-Woodbend (Alta.) 2.53
- Redwater (Alta.) 2.42
- Steelman A (Sask.) 2.435
- Virden (Man.) 2.30

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 47.0-47.9, Tucupido $3.34
- San Joaquin, 41.0-41.9, Puerto la Cruz 3.10
- Oficina, 35.0-35.9, Puerto la Cruz 2.78-2.80
- Tia Juana, Medium, 26.0-26.9, Amuay 2.30
- Bachaquero, flat, Las Piedras 1.75-1.88
- Tarra, 38.0-38.9, San Lorenzo 2.83
- Lagunillas Heavy, flat, Las Piedras 2.10

†*Differential per deg. of grav. varies.*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura $1.90
- Safaniya, 27.0-27.9, Ras Tanura 1.50
- Iran, 34.0-34.9, Bandar Mashur 1.86
- Iran, 34.0-34.9, Abadan 1.81
- Iraq, 35.0-35.9, Fao 1.80
- Kuwait, 31.0-31.9, Mina-al-Ahmadi 1.67
- Qatar, 41.0-41.9, Umm Said 2.05
- Neutral Zone, Burghan, 23.5-24.4, Mina Saud 1.51
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud 1.38

Middle East, Eastern Mediterranean
- Arabia, 34.0-34.9, Sidon $2.27
- Iraq, 36.0-36.9, Tripoli, Banias 2.31

Far East, Cargoes FOB Lutong, Sarawak
- Seria Light, flat $2.57

KEY TANKER RATES

(Last paid, per long ton, single voyage)

- **U.S. Gulf-New York, clean ... (USMC + 5%) $2.99↑**
- U.S. Gulf-New York, dirty ..... (USMC—10%) $2.57
- NWI-USNH, dirty ..... (USMC—50%) $1.38
- NWI-UK/Cont., dirty ..... (Scale—52½%) 15/7*
- Pers. Gulf-UK/Cont., dirty ..... (Scale—62½%) 18/4*
- Persian Gulf-USNH, dirty ..... (USMC—70%) $3.81

**Sterling*

ADVERTISERS IN THIS ISSUE

Armco Drainage & Metal Prods. Inc.	30
Baker Oil Tools, Inc.	18
Beaird Co., Inc., J. B.	10
Caterpillar Tractor Co.	44-45
Cities Service Oil Co.	9
Delta Tank Mfg. Co. Inc.	2
Dow Chemical Co.	28-29
Dowell	4, 15
DuPont Finishes Div.	23
Ethyl Corp., Chemical Div.	1
Fenix & Scission, Inc.	42
Foster Wheeler Corp.	Cover 3
Grove Valve & Regulator Co.	43
Gulf Oil Corp.	63
Hughes Tool Co.	Cover 4
Ingersoll-Rand Co.	55
Jones & Laughlin Steel Corp.	24-25
Magnet Cove Barium Corp.	33
McGraw-Hill Book Co.	34
National Lead Co.	47-48
National Supply Co.	35-38
Parkersburg Rig & Reel Co.	27
Precision Scientific Development Co.	54
Pittsburgh Coke & Chemical Co.	57
Republic Steel Corp.	40-41
Rockwood Sprinkler Co. Ball Valve Div.	53
Royal Bank of Canada, The	7
Schlumberger Well Surveying Corp.	Cover 2
Scott-Rice Co.	69
Smith Corp. A. O. Smith-Erie Div.	51
Thermoid Div. H. K. Porter Company Inc.	20
U.S. Rubber Co.	16
Warren Petroleum Corp.	50
Wilson Supply Co.	8
White Weld & Co.	46
Woodfield Pickering Ltd.	21

Classified Advertising
F. J. Eberle, Business Mgr.

Equipment Used or Surplus New For Sale	69
Equipment Wanted	69

PETROLEUM WEEK REPRESENTATIVES

Atlanta 3 R. H. Powell
1301 Rhodes-Haverty Bldg.
Jackson 3-6951

Boston 16 David G. Sawyer
350 Park Square Bldg.
Hubbard 7-7160

Chicago 11 Edward A. Callahan Jr.
H. Sherman Davis
520 N. Michigan Avenue
Mohawk 4-5800

Cleveland 15 J. E. MacArthur
1164 Illuminating Bldg.
55 Public Square
Superior 1-7000

Denver 2 J. W. Patten
Tower Bldg., 1700 Broadway
Alpine 5-2981

Houston 25 D. O. Hanson
724 Prudential Bldg.
Jackson 6-1281

Los Angeles 17 Peter S. Carberry
1125 W. Sixth St.
Huntley 2-5450

New York 36 David G. Sawyer
500 Fifth Ave.
Oxford 5-5959

Philadelphia 3 W. A. Potter
6 Penn Center Plaza
Locust 8-4330

Pittsburgh 22 J. E. MacArthur
Room 1111, Oliver Bldg.
Express 1-1314

San Francisco 4 William C. Woolston
68 Post Street
Douglas 2-4600

Tulsa 3 J. A. Hartley
909 Enterprise Bldg.
522 South Boston
Gibson 7-5594

England, London E. C. 4 E. E. Schirmer
McGraw-Hill Co., Ltd.
95 Farrington St.

DEPT/Personals

H. C. Teasdel

K. H. Shaffer

HAROLD C. TEASDEL will become chairman of The California Co., New Orleans, on June 1, and **KENNETH H. SHAFFER** will succeed him as president. Teasdel joined Standard Oil Co. of California, Calco's parent, in 1920. He has been president of the subsidiary since 1947. Shaffer, who was elected chairman of Standard Oil Co. of Texas, Houston, another California Standard subsidiary, on Jan. 1, resigned this office Apr. 1. Before Jan. 1, Shaffer was president of Standard of Texas. **J. E. Gosline,** formerly vice-president and assistant to the president of The California Co., succeeded Shaffer as president.

E. D. BROCKETT and **I. G. DAVIS** have been elected directors of Warren Petroleum International Corp., New York, Gulf Oil Corp.'s subsidiary engaged in international marketing of LPG. Brockett is executive vice-president and a director of Gulf and a member of its executive committee, and Davis is Gulf's senior vice-president.

W. S. SPANGLER has been elected president of Humble Pipe Line Co., Houston, succeeding **A. E. Pecore,** who is retiring. Spangler was formerly vice-president and general manager. At the same time, **William A. Castille** was elected vice-president in charge of operations for the pipeline company, and **P. D. Phillips, Jr.,** vice-president in charge of plans and economics. Castille was formerly acting assistant general manager, and Phillips was assistant general manager.

FRANK GAINES, JR., moves up from assistant area production manager to manager at Mattoon, Ill., for the Carter Division of Humble Oil & Refining Co. He replaces **R. E. Hammond,** who has transferred to Carter's Tulsa headquarters as assistant production manager. **J. S. Bottler, Jr.,** formerly assistant chief petroleum engineer in the Tulsa headquarters office, succeeds Gaines at Mattoon as assistant production manager for eastern operations. **J. B. Campbell,** area engineer at Oklahoma City, replaces Bottler in Tulsa, and **Egon H. Rohr,** who has been serving as Campbell's assistant, takes over his position.

DR. D. R. FREY is general manager of the new product development and quality control department of Kerr-McGee Oil Industries, Inc., Oklahoma City. Others assigned to the new department are: **L. W. Okon,** manager of sales technical services; **F. C. Champlin,** chief chemist; and **H. L. Norlin,** laboratory supervisor. The new department will coordinate the technical activities of the company and its subsidiaries in producing, refining, and marketing.

JOSEPH L. SEGER becomes vice-president for public affairs and government relations for Humble Oil & Refining Co., Houston, on June 1. Seger is currently president of Humble's Carter division, in Tulsa. **John W. Brice,** now executive vice-president of Humble, will become president of Carter. He was president of Carter Oil Co. before it became a division of Humble. Brice will continue as a Humble director for the immediate future.

J. L. Seger

A. F. Kaulakis

ARNOLD F. KAULAKIS has been appointed acting general manager of engineering for Esso Research & Engineering Co., with offices at the company's new scientific center in Florham Park, N. J. He will be responsible for the company's 800-man engineering staff, which provides engineering services to the world-wide petroleum refining and petrochemical operations of Standard Oil Co. (N. J.). Kaulakis, who has been with Esso Research since 1942, was most recently director of the process research division. He has also been in charge of the company's employee relations activities.

CHARLES H. BURKHARDT was named acting manager of the Oil Heat Institute of America, at its convention in New York last week. He succeeds **Ralph H. Becker,** who has resigned because of ill health. Burkhardt was formerly national secretary of OHI's distribution division. At the same time, **Everett Elliott,** Charles Elliott & Son, Danvers, Mass., was elected chairman of the distribution division, and **Al Loucks,** Salem, Ore., president of the Oil Heat Institute of Oregon, was given additional responsibilities as vice-president of the distribution division. Elliott succeeds **T. R. Loizeaux,** T. R. Loizeaux Fuel Co., Plainfield, N. J., who was reelected OHI vice-president representing the distribution division. **Fred Heaney,** Skaggs-Walsh, Inc., Long Island City, N. Y., was reelected national president of OHI.

ROBERT G. MILLER and **EINAR B. PAUST** have been appointed assistant general counsels for Standard Oil Co. (N. J.), New York. Miller has been in the Jersey Stand-

ard law department since 1948, and Paust was most recently general counsel of the Esso Standard division of Humble Oil & Refining Co.

A. E. McKAY, president of Continental Geophysical Co., Ft. Worth, and **J. P. WOODS,** director of Atlantic Refining Co.'s geophysical laboratory in Dallas, are nominees for the presidency of the Society of Exploration Geophysicists. Election of the society's officers will be conducted by mail ballot next June. Winners will take office next November at the SEG's international meeting at Galveston, Tex. Candidates for first vice-president are **John C. Hollister,** head of the department of geophysical engineering at Colorado School of Mines, Golden, Colo., and **W. B. Lee,** supervisor of geophysical operations for Gulf Oil Corp.'s Houston production division. For the office of vice-president, **Flint Agee,** vice-president and manager of North American operations for United Geophysical Corp., Pasadena, Calif., opposes **Robert C. Kendall,** area geophysicist for Shell Oil Co.'s Denver area. Candidates for secretary-treasurer are **George D. Garland,** associate professor of geophysics at the University of Alberta, Edmonton, and **Francis A. Hale,** chief geophysicist of California Standard Co., Calgary.

JOHN D. MOODY has joined Plymouth Oil Co. as manager of exploration, with headquarters in Sinton, Tex. He will be in charge of the geological, geophysical, and land departments. He was formerly exploration coordinator for Gulf Oil Corp., at Pittsburgh.

J. D. Moody

R. A. Payne

ROY A. PAYNE is head of Gulf Oil Corp.'s New Orleans production district, which covers the southern half of Louisiana and the Louisiana offshore area. Managers of the district's various functions are: **H. D. Ritter,** exploration; **W. B. Hopkins,** production; and **J. A. Austin,** services. Payne has been with Gulf since 1928, and Ritter since 1937. Hopkins has been Gulf's production manager at New Orleans since 1957, and Austin was most recently zone clerk there. **E. A. Malone** will be district exploration geologist, and **A. J. Carothers** district landman, serving under Ritter. The production men serving under Hopkins are **A. W. Habarta,** district production geologist, and **G. B. Scarborough,** district engineer. Area production managers are **V. T. Jones, Jr.,** Morgan City, and **H. H. Moore,** Delta. **E. J. Sablatura** is cycling plant superintendent at Krotz Springs.

R. G. McCUISTION, supervisor for Empire Geophysical, Inc., has been transferred from its Midland (Tex.) regional office to Farmington, N. M. He has been assigned to supervision of field operations and interpretation for the company's seismic operations in the Four Corners area.

J. W. COLE, JR., is the new vice-president of West Texas Gathering Co., Odessa. He joined the company in 1958 as general manager and assistant secretary-treasurer. He will continue in both these positions.

J. W. Cole, Jr.

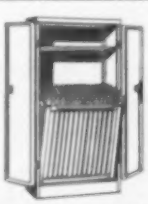
W. B. Padon

WILLIAM B. PADON has been elected vice-president in charge of administrative affairs for Transwestern Pipeline Co., Houston. He has been vice-president, a director, and a member of its executive committee since shortly after it was organized by Monterey Oil Co., Los Angeles, and Warren Petroleum Corp., Tulsa. Padon has resigned as vice-president and a director of Warren to devote full time to his duties with Transwestern.

HENRY KERR, general superintendent of production operations for Delhi-Taylor Oil Corp., Dallas, has been chosen chairman for the coming year of the Southwestern District of API's Production Division. He succeeds **L. L. McDonald,** assistant Ft. Worth division manager for Pure Oil Co., who was elected chairman of the district advisory committee. **Henry P. Shackleford,** Tidewater Oil Co., Hobbs, N. M., has been elected district secretary-treasurer for the coming year. Newly elected vice-chairmen and their areas of responsibility are: **J. W. Sallee,** Cardinal Chemical Co., Midland, West Texas; **Charles Foster,** Gulf Oil Corp., Wichita Falls, North Central Texas; **George Geyer,** Cities Service Oil Co., Hobbs, N. M., Southeastern New Mexico; **Al Greer,** Benson-Montin-Greer Drilling Corp., Farmington, N. M., Northwestern New Mexico; **E. C. Micak,** Standard Oil Co. of Texas, Gainesville, Northeast Texas; and **C. E. Smith,** Western Co., Lubbock, South Plains.

JAMES J. McBRIDE is the new president, and **EMMENT O'NEAL** chairman, of the recently reorganized United Cuban Oil, Inc. The company has moved its headquarters from Los Angeles to Houston. McBride is an independent oil and mining operator in Houston and San Antonio; O'Neal is a former congressman from Kentucky, and was ambassador to the Philippines from 1946 to 1948. Other officers of the reorganized company are: **John Martin,** executive vice-president; **G. C. Short,** vice-president, mining; **John Mackie,** vice-president, investment; **W. M. Laird,** secretary; **Joseph Lampton,** treasurer and comptroller; and **J. Paul Ratliff,** director. The company is currently negotiating for the acquisition of producing oil and gas properties in the United States, in addition to its Cuban oil concessions.

WILFRED C. HUGLI, JR., becomes manager of operations research for Cities Service Oil Co., New York. Hugli, who has been engaged in research activities for the past 20 years, was formerly an independent consultant.

MAP  FILE

CONFIDENTIAL — DOORS LOCK!

The sturdy MT4 steel cabinet map file has 112 tilting tubes. Easy to file and find maps, tracings and blue prints to 60" lengths. Keeps valuable information dust proof and confidential. Popular everywhere in both field and home offices. Write for illustrated information.

SHIPPED IMMEDIATELY FROM STOCK
Patent No. 1610368. Other Patents Pending.
SCOTT-RICE CO., 610 S. Main, Tulsa 19, Okla.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT • BUSINESS
EQUIPMENT — USED OR RESALE

OPPORTUNITIES

DISPLAYED RATE
EQUIPMENT & BUSINESS OPPORTUNITY advertising $16.75 per inch.
EMPLOYMENT OPPORTUNITIES — $15.00 per inch, subject to Agency Commission.
UNDISPLAYED RATE
(Not available for equipment advertising)
$1.00 a line, minimum 3 lines.
POSITIONS WANTED undisplayed rate is one-half of above rate, payable in advance.
Box Numbers—Count as one line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.

PIPE		PIPE
	2,500,000 ft. 2" — $ .96¢ to the foot	
	1,000,000 ft. 3" — 7.70¢	
	1,000,000 ft. 4" — 10.96¢	
	500,000 ft. 6" — 19.80¢	
	200,000 ft. 8⅝" — 28¢	
	400,000 ft. 10¾" — 35¢	
	75,000 ft. 12¾" — 40¢	
	10,000 ft. 16" — 42¢	

All No. 1 Grade Plain End and Cleaned.
INDIANA-OHIO PIPE CO.
P.O. BOX 5412 Shepard Sta., Phone CL 8-5527
COLUMBUS 19, OHIO

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
New York 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

WANTED

Wanted Surplus Oil Well Drilling Equipment sought by Investor for foreign use. Please write W-1169, Petroleum Week.

DON'T FORGET

the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

Canada Acts and Captures U.S. Markets

CANADA'S PHILOSOPHY of natural gas regulations is in sharp contrast to that prevailing in the U.S. Reduced to its barest essentials, the Canadian view appears to be to push for all the markets that can be obtained.

In the U.S., on the other hand, the regulatory procedure that has been inherited from the Supreme Court's interpretation of the Natural Gas Act of 1938 appears to be one of creating obstacles to the sale of natural gas in interstate commerce.

The decision of Canada's National Energy Board to approve five out of six pending applications to export 1-billion cf/d of gas to U.S. purchasers represents a positive policy for the Canadian Government. It is a policy derived after about two years of study of Canada's energy resources and requirements.

But more than five years after the Supreme Court ruled in the Phillips Petroleum case that gas producers selling to interstate transmission firms are subject to Federal Power Commission regulation, the U.S. Government is still groping for a satisfactory implementing regulatory procedure. And with the indecision in Washington, domestic producers with ample reserves to supply all foreseeable U.S. requirements watch while Canadian gas captures their markets this side of the border.

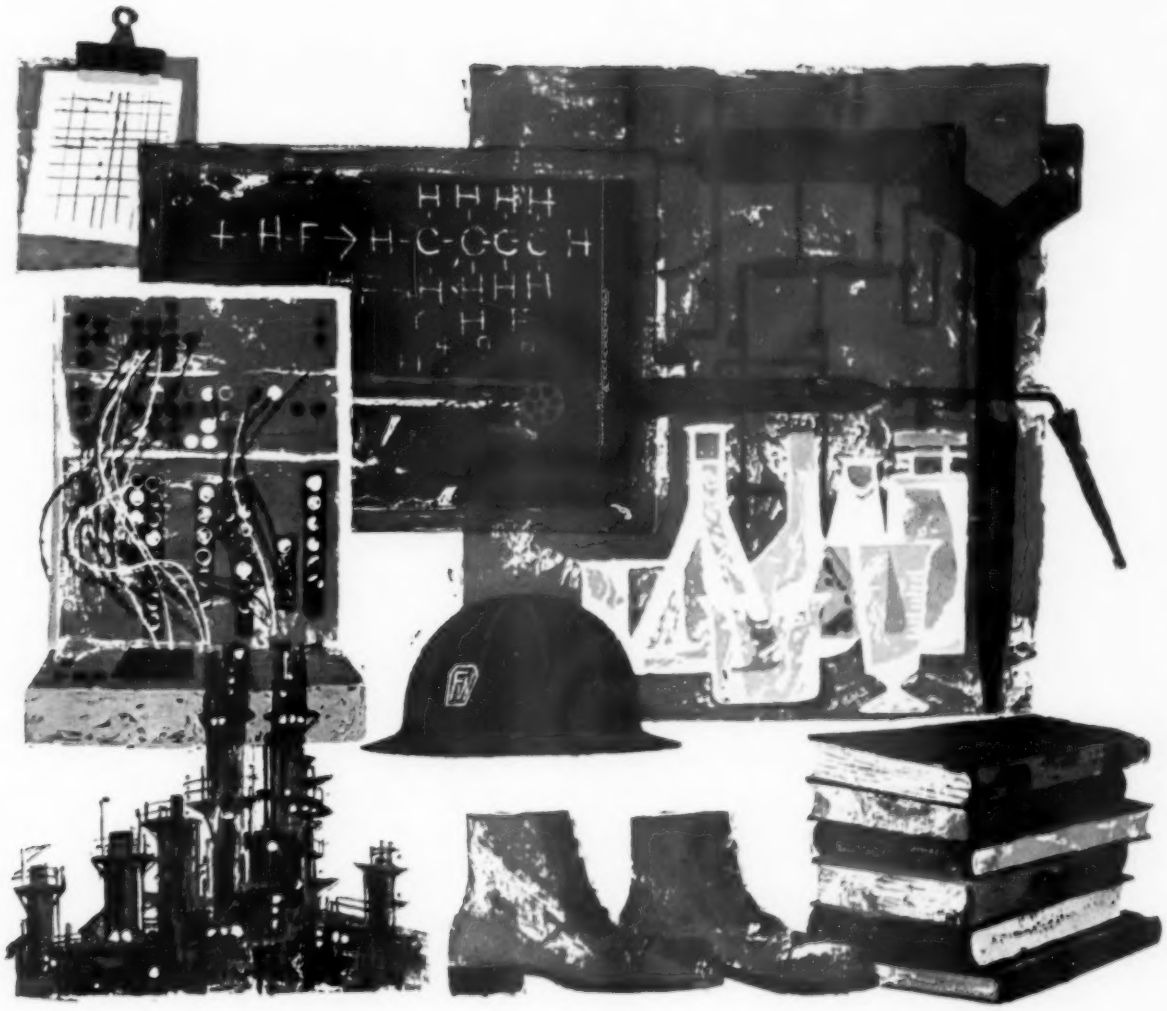
The need for remedial natural gas legislation being proposed once again by producer groups was never more urgent. The 1-billion cf/d now authorized for export to the U.S. from Canada undoubtedly is just the start. More applications will be made.

THE IRONY OF THE SITUATION is that the gas to be imported from Canada—once FPC gives the final approvals—will command higher prices in the U.S. than domestic gas in many instances, and also higher prices than are now being paid by Canadian users.

One purchaser, Montana Power Co., will pay 22.63¢ per Mcf. for Canadian gas at the border in the first year of its contract—a price the company says compares with the 15.69¢ per Mcf. it now pays for domestic gas.

The field prices that Canada's National Energy Board approved range initially from 11¢ to 14¢ per Mcf., not high on a Btu. basis.

But regardless of the field prices, Canadian producers have high praise for their government's new export policy, since it provides them with a substantial outlet for their gas. And with Canada permitting a 7½% rate of return to the transmission firms exporting the gas, the incentive provided will encourage additional export contracts, opening more markets for the gas produced in Western Canada.



a single source for all you need to make your process ideas succeed

Your ideas will thrive best in the company of people experienced in developing the ideas of others.

At Foster Wheeler you will find everything you need to make your process ideas a commercial success. There are men skilled in laboratory research and commercial evaluation to probe the practical possibilities of your ideas. To design and engineer your process plant there is a community of engineering professions—structural, heat and power, chemical, hydraulic, process . . . experts on pressure vessels and instrumentation . . . and people experienced in project management, plant construction and start-up.

From this comprehensive approach you can expect profitable operation at rated capacity soon after completion.

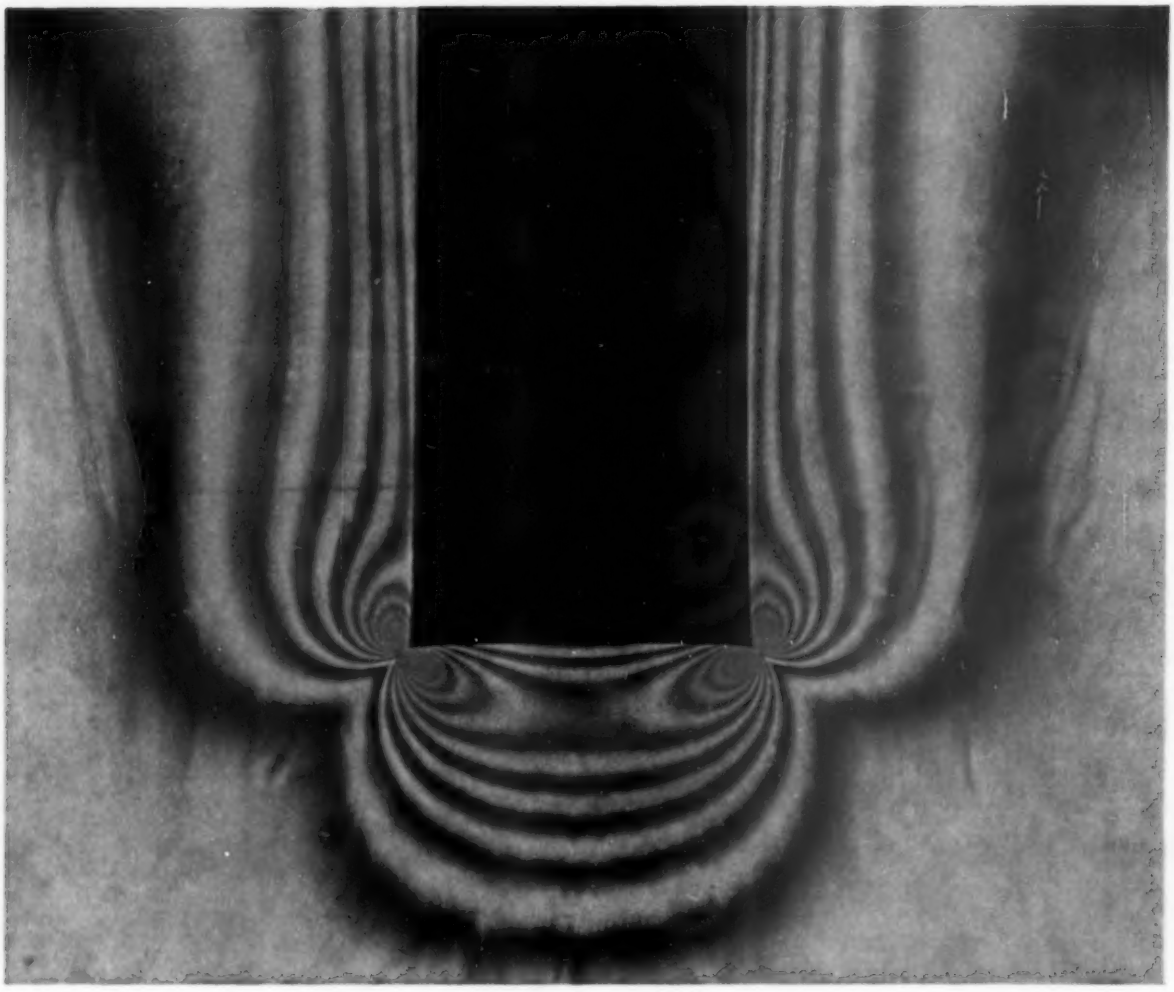
Two recent examples are plants delivered in good time and in good working order, operationally ready for quick write-off. They are a new ammonia plant producing in excess of 300 ton/day that exceeded rated capacity within 30 days of start-up; and a complete lube oil plant built in the Middle East which was in full production less than two years after award of the contract.

Before you specify, consult with Foster Wheeler. We are ready when you are. Foster Wheeler Corporation, 666 Fifth Avenue, New York 19, New York.

Heat Engineered products, plants and processes . . . for the world's industrial progress.

FOSTER FW WHEELER

NEW YORK LONDON PARIS ST. CATHARINES, ONT.



● Well stresses studied for drilling clues

Determining stresses in wells drilled into the earth's crust is the objective of the mathematical and three dimensional photoelastic study being conducted by Hughes research engineers.

It is part of the continuing basic research program being carried on at Hughes to explore a wide range of possibilities for improving bit performance and drilling techniques.

In this study, a hole is drilled into a plastic casting and then forces, which simulate mud column and formation pressures, are applied. The resulting stress distribution is permanently maintained in the model by a technique known as the "Frozen Stress Method." A thin slice is taken from the model and viewed in polarized light. The photograph, above, shows one of these slices. Utilizing the principles of photoelasticity, information obtained from these slices may be used to calculate the stress conditions at any point.

Basic research, such as this, is continuing to extend the frontiers of our knowledge of conditions at the bottom of the hole, and is resulting in improved bit designs and further advances in drilling techniques.

HUGHES TOOL COMPANY

ORIGINATOR AND WORLD'S LEADING DEVELOPER OF CONE-TYPE ROCK BITS